December 1987

RISK ASSESSMENT
PROPOSED HOUSING AREAS 1 AND 2
NAVAL STATION TREASURE ISLAND
HUNTERS POINT ANNEX

Volume II
Appendices

DEPARTMENT OF THE NAVY
WESTERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
SAN BRUNO, CALIFORNIA 94066-0727

RISK ASSESSMENT
PROPOSED HOUSING AREAS 1 AND 2
NAVAL STATION, TREASURE ISLAND
HUNTERS POINT ANNEX

VOLUME II
Appendices

Prepared for:

U.S. Navy
Western Division
Naval Facilities Engineering Command
San Bruno, CA 94066-0727

Under Contract Number
N62474-86-D-0996

Submitted to:

Harding Lawson Associates
Novato, CA

Prepared by:

Aqua Terra Technologies, Inc.
Walnut Creek, CA

DRAFT

By: _____
Ronald M. Block, Ph.D.
Principal Toxicologist

DRAFT

By: _____
Patrick J. Sheehan, Ph.D.

DRAFT RISK ASSESSMENT PROPOSED HOUSING AREAS 1 AND 2

DATED 01 DECEMBER 1997

THIS RECORD CONTAINS MULTIPLE VOLUMES WHICH HAVE BEEN ENTERED SEPARATELY

VOLUME I OF II IS ENTERED IN THE DATABASE AND FILED AT ADMINISTRATIVE RECORD NO. **N00217.000135**

VOLUME II
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APPENDIX A

Surface Investigation-
Proposed Housing Areas 1 and 2
Ex-Hunters Point Naval Shipyard

Harding Lawson Associates

Transmittal/Memorandum

To: Aqua Terra Technologies
2950 Buskirk Avenue Suite 120
Walnut Creek, California 94596

ATTENTION: MS. JAN HALE

From: David H. Peterson David H. Peterson
Date: October 28, 1987
Subject: Hunters Point Housing Areas 1 and 2
Job No.: 2176,126.02

Remarks:

Enclosed are certified laboratory reports for chemical analysis of soil samples in Housing areas 1 and 2, by Curtis and Tompkins. The client I.D. number(HLA) for the lab reports for semivolatile compounds(EPA 8270) for samples 8704-1.5, 8704-4.5, 8714-3.0 and 8714-4.5 were typed incorrectly; I have penciled in the corrected sample numbers. Curtis and Tompkins will be submitting corrected copies for these in the next day or so.

Please note that our ID number has the "87" prefix(year), followed by boring number, and lastly, depth of the sample in feet.

cc:

A Report Prepared for

Commanding Officer
Western Division
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, California 94066

SUBSURFACE INVESTIGATION
PROPOSED HOUSING AREAS 1 AND 2
EX-HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA

HLA Job No. 2176,126.02

by

David H. Peterson
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October 30, 1987

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I INTRODUCTION

This report presents the results of Harding Lawson Associates' (HLA) subsurface investigation of proposed Housing Areas 1 and 2 at Ex-Hunters Point Naval Shipyard (Disestablished), San Francisco, California. The areas are located on a moderately sloping ridge in the northwestern portion of the shipyard. As shown on the Location Map, Plate 1, Housing Area 1 is along Navy Road, north of Crisp Avenue. Housing Area 2 lies south and east of the main gate into the shipyard, near the intersection of Donahue Street and Innes Avenue.

In the past, Areas 1 and 2 have been used for personnel housing by both the Navy and its lessee, Triple A Machine Shop. Buildings in Area 1 were demolished and only concrete slab foundations and an asphalt-paved road (Navy Road) remain (Plate 2). Houses are still present in Area 2, although most of them are unoccupied (Plate 3).

Plans are to remove the existing structures and construct new housing in Areas 1 and 2 for Navy personnel. Site plans for the proposed construction were not provided to HLA.

This investigation was requested by Western Division, Navy Facilities Engineering Command (WESTDIV) in Navy Contract N62474-86-D-0996, Delivery Order 0004. The purpose of HLA's investigation was to provide supporting data on the near-surface conditions in the two housing areas to Aqua Terra Technologies (ATT) for their use in preparing a preliminary risk assessment. The risk assessment will be submitted as a separate report.

HLA's services for this project included drilling exploratory borings, sampling soil from the borings, performing analytical testing of the samples (by a state-certified laboratory), and preparing this report. ATT's scope included air monitoring, evaluation of available chemical data, and preparation of the preliminary risk assessment. HLA's and ATT's respective scopes of work were outlined in a Work Plan dated September 1, 1987, that were presented to WESTDIV.

II FIELD PROGRAM

Subsurface conditions were explored by means of 17 borings (H-1 through H-17), which were drilled and sampled on September 3, 4, 8, and 10, 1987. Sixteen borings were drilled using a truck-mounted 8-inch diameter hollow-stem auger drill rig and one by hand sampling methods. The boring locations, shown on Plates 2 and 3, were selected to provide, within the limits of equipment access, a general screening of near-surface chemical conditions in both housing areas. The total depth of the hollow-stem auger borings ranged from 4.5 to 35.0 feet below ground surface. Boring H-7 was hand-sampled because the site was inaccessible to a drill rig. Borings H-3, H-6, H-11, and H-14 were drilled to depths of approximately 20 feet in an attempt to sample ground water as well as soil. When no ground water was encountered in these four borings, Boring H-17 was drilled to a depth of 35 feet at a lower elevation west of Area 2 in an unsuccessful attempt to obtain a ground-water sample.

The borings were logged by an HLA field geologist. Soils were described according to the Unified Soil Classification System (Plate 4) and rock was described by the criteria shown on Plate 5. The boring logs are shown on Plates 6 through 16.

Soil and rock samples were collected using a split-barrel sampler driven into undisturbed soil ahead of the auger with a 140-pound hammer. Samples to be submitted for chemical analysis were collected in 6-inch long stainless steel tubes that lined the sampler. Brass tubes were used to collect samples for lithologic logging. In Boring H-7, one soil sample was collected by removing the surface 0.3 ft. of soil and placing it in a stainless steel tube; this sample was submitted for

asbestos analysis. A second sample was collected from below this by hammering a stainless steel tube into the ground, and removing the tube by digging away the surrounding soil. Foil-lined plastic caps were used to seal the ends of the sample tubes that were submitted for analysis for metals, volatile organic compounds (VOCs), semivolatile organic compounds (SOCs), or polychlorinated biphenyls (PCBs). Foil was not used when sealing the samples for asbestos analysis. All sampling tubes were labeled and the end caps sealed with tape.

Soil samples to be analyzed for metals, VOCs, SOCs, and PCBs were stored on ice until delivery later in the day to the laboratory. Samples obtained for asbestos analysis were not stored on ice and were submitted to the laboratory at the completion of the field program. Completed chain of custody documentation accompanied the samples. The sample numbering system consists of the prefix "87" (year) followed by the boring number and, lastly, sample depth, in feet (for example, 8710-5.0 is Boring H-10 at a depth of 5.0 feet).

The augers were steam cleaned prior to use at the site and between borings. Between sample runs, sampling equipment was steam cleaned or washed with Alconox (a non-phosphate detergent) and rinsed with clean tap water. All borings were grouted with neat cement and bentonite to within approximately 1 foot of ground surface. The upper foot of each boring was backfilled with native material. Soil cuttings generated during drilling were placed on plastic sheeting adjacent to the borings and also covered by plastic. The cuttings were left on-site, pending the results of the chemical analysis to determine their status for disposal.

III ANALYTICAL PROGRAM

Because of the relatively thin soil profile preserved in both housing areas, analytical testing was limited to near-surface soil samples. Samples of the underlying bedrock were not analyzed. Chemical analysis of the soil samples was performed by Curtis & Tompkins, Ltd., of San Francisco, a laboratory certified by the State of California for hazardous waste analyses. The soil samples were analyzed by EPA Test Method 8240 for VOCs, EPA Test Method 8270 for SOCs, atomic absorption spectrophotometry for metals, and EPA Test Method 8080 for PCBs. Polarized-light microscopic analysis for asbestos was performed by TMA/Norcal, of Richmond, California. No water samples were submitted for analysis because ground water was not encountered in any of the borings.

IV SITE CONDITIONS

A. Housing Area 1

The geologic conditions in Housing Area 1 are shown on the Site and Geologic Map (Plate 2). Area 1 is underlain by serpentinite bedrock that is a part of the Franciscan Complex. Serpentinite is extensively exposed in cut faces throughout the area, and was generally encountered at shallow depths in the test borings. Borings drilled in the upper northeastern slopes of Area 1 encountered sandy silt surface soils to depths of 1.5 feet which were underlain by bedrock. On the lower slopes borings encountered clayey silt and silty sand soils to the depths explored (5.5 to 6 feet deep). These soils were mapped by the U.S. Geological Survey (Bonilla, 1971) as slope wash and ravine-fill deposits and were likely derived from erosion and downslope transport of bedrock materials. Ground water was not encountered in any of the borings.

B. Housing Area 2

Surface soils range from clayey silt to silty sand. Grading for prior site development has removed soil cover from some areas (Boring H-15) and placed soils as fill in other locations (Boring H-11). Soil depths in the test borings throughout most of this area range from 0 to 5 feet, with the exception of H-14, which encountered 9.5 feet of soil.

Beneath these surface soils and as shown on Plate 3, Housing Area 2 is underlain by serpentinite and sandstone/shale units of the Franciscan Complex. In addition, Borings H-10 and H-11 encountered greenstone, an altered/metamorphosed volcanic rock. A north-trending fault has been mapped

between the serpentinite and sandstone/shale units within Area 2 (Bonilla, 1971). Boring H-14 was drilled near or within this fault zone and encountered intensively sheared rock that may be fault gouge material. There are no published studies to indicate that any of the faults at Hunters Point Shipyard are active.

A landslide is present in the southern corner of the area, with slope debris and ravine fill deposits mapped at the northwestern and northeastern boundaries (Bonilla, 1971).

Ground water was not encountered in any of the borings. Boring H-17 was drilled to auger refusal to a depth of 35 feet in serpentinite and also did not encounter ground water.

V ANALYTICAL RESULTS

Certified laboratory reports for the analyses performed by Curtis & Tompkins including Quality Assurance/Quality Control summaries and detection limits, are presented in Appendix A. The results of the asbestos analyses performed by TMA/Norcal are presented in Appendix B.

The analyses did not detect VOCs or PCBs in any of the soil samples from Areas 1 and 2. The only SOC detected was bis(2-ethylhexyl) phthlate at a concentration of 7 parts per million (ppm) at 5.5 feet in Boring H-1. Analyses of heavy metals detected zinc, nickel, copper, chromium (total), barium, cobalt, and vanadium in nearly all of the samples. A summary of the ranges of metal concentrations in soils in Areas 1 and 2 is presented on Table 1.

Nickel concentrations in soils vary throughout both housing areas, but were detected at levels exceeding the Total Threshold Limit Concentration (TTLC)* of 2,000 ppm in Borings H-1, H-5, H-6, H-7 (Area 1) and H-14 (Area 2). In all of these borings, serpentinite comprises the underlying bedrock unit. Nickel has been found to occur at concentrations between 1,400 and 2,000 ppm in ultramafic rocks (including serpentinite) and soils formed on serpentinite have been found to contain nickel in naturally occurring concentrations as high as 7,000 ppm (Kabata-Pendias, 1984).

Similarly, chromium is found at higher concentrations in ultramafic rocks than in most other types of bedrock. Chromium concentrations in most soil range from 5 to 300 ppm; however, natural occurrences of chromium in soils developed

*The TTLC is defined (California Administrative Code, Title 22, Division 4, Article 11, Section 66699) as the concentration of an element at which it is classified as a hazardous waste.

on serpentinite can range from 500 to 62,000 ppm (EPA, 1978). Total chromium concentrations in samples from Housing Areas 1 and 2 were on the low end of this range, from 74.4 to 884.0 ppm.

Lead and mercury were detected in one surface sample obtained at Boring H-5 (Area 1) in concentrations of 48.0 and 0.08 ppm, respectively. These concentrations are below the TTLC for both elements. Neither lead nor mercury was found in any of the other samples. Concentrations of zinc, copper, barium, cobalt, and vanadium in soils range from below limits of detection to about 200 ppm; these levels are below the TTLCs for those elements.

The results of asbestos analyses are summarized in Table 2. Asbestos analyses were performed on samples from all borings where soil samples were obtained. No asbestos analysis was performed on samples from Borings H-5, H-6, H-8 (Area 1), and H-15 (Area 2), because bedrock is present at the ground surface. With the exception of Boring H-14, asbestos concentrations ranged from nondetectable to less than one percent (below the TTLC of one percent). The sample from Boring H-14 yielded 5 to 10 percent asbestos in the form of the mineral chrysotile. This sample was obtained at a depth of 0.5 feet in the landscaped front yard of a residence (Building R-39) in Area 2. There were no visible indications of asbestos-related industrial materials (pipe lagging, fabric, etc.) at this location.

VI DISCUSSION AND CONCLUSIONS

Soil samples obtained for chemical analysis yielded elevated concentrations of nickel and chromium. However, although nickel concentrations exceeded the TTLC in some of the borings, the concentrations of both nickel and chromium appear to fall within normal limits for serpentine-derived soils. Because there are no known previous disposal activities at the two housing sites, nor any physical evidence of such activities that would have generated the relatively consistent metals concentrations, it appears likely that the concentrations represent naturally-occurring background levels for these elements.

Asbestos contents measured in soils throughout the housing areas generally fall below 1 percent, the established TTLC. Chrysotile asbestos is a minor constituent of serpentinite and associated ultramafic rocks, and typically occurs as veinlets scattered throughout the rock mass. The analyses performed for this study were confined to soil, due to the irregular occurrence of chrysotile in serpentinite and the limitations imposed on analysis by grinding rock specimens for sample preparation. The soil samples are considered to be more representative of average surface conditions and to be a more readily mobilized source of asbestos (via airborne emissions or surface runoff) than bedrock. A relatively high concentrations (5 to 10 percent) of asbestos was found in the near-surface soil in Boring H-14. There were not indications of prior disposal of asbestos at this location and it is probable that the asbestos was naturally occurring.

Ground water was not encountered within the depths explored in Housing Areas 1 and 2, or within the depth of Boring H-17 at the base of the cut slope west of Area 2. In general, serpentinite is not considered an aquifer and rarely yields

water of sufficient quantities for domestic supply. Sandstone and greenstone sometimes form units which serve as local sources of domestic water, although the occurrence of ground water in these materials and the yields to wells are variable. No wells are known to be present within the housing areas. Since ground water is not present near ground surface and no water supply for the areas will be derived from ground water, it seems unlikely that ground-water quality issues will have direct impacts on the proposed development.

VII REFERENCES

Bonilla, M. G., 1971, Preliminary Geologic Map of the San Francisco Quadrangle and Part of the Hunters Point Quadrangle, California: U.S. Geological Survey Misc. Field Studies Map MF-311, Scale 1:24,000.

EPA, 1978, Reviews of the Environmental Effects of Pollutants: III. Chromium; U.S. EPA Publication EPA-600/1-78-023, pp. 2-4, prepared for Health Effects Research Laboratory.

Kabata-Pendias, A., 1984, Trace Elements in Soils and Plants: CRC Press, Inc., Boca Raton, Florida.

TABLES

Table 1. Ranges in Metal Concentrations in Soil Samples

Metal	Area 1	Area 2	TTLC*
Arsenic	ND**	ND	500***
Antimony	ND	ND	500
Barium	8.0 - 77.0	3.6 - 218.0	1000
Beryllium	ND	ND	75
Cadmium	ND	ND	100
Chromium	124.0 - 552.0	74.0 - 884.0	2500
Cobalt	66.2 - 160.0	39.0 - 136.0	8000
Copper	6.0 - 16.6	4.2 - 48.0	2500
Lead	48	ND	1000
Mercury	0.08	ND	20
Molybdenum	ND	ND	3500
Nickel	178.0 - 2500.0	50.6 - 2070.0	2000
Selenium	ND	ND	100
Silver	ND	ND	500
Thallium	ND	ND	700
Vanadium	17.4 - 58.4	31.8 - 78.4	2400
Zinc	14.8 - 66.8	15.0 - 46.0	5000

*TTLC = Total Threshold Limit Concentration; California Administrative Code, Title 22, Division 4, Article 11, Section 66699

**Not detected (see certified lab reports, Appendix A, for detection limits)

***All concentrations expressed in mg/kg (roughly equivalent to ppm)

Table 2. Results of Asbestos Analyses of Soil Samples

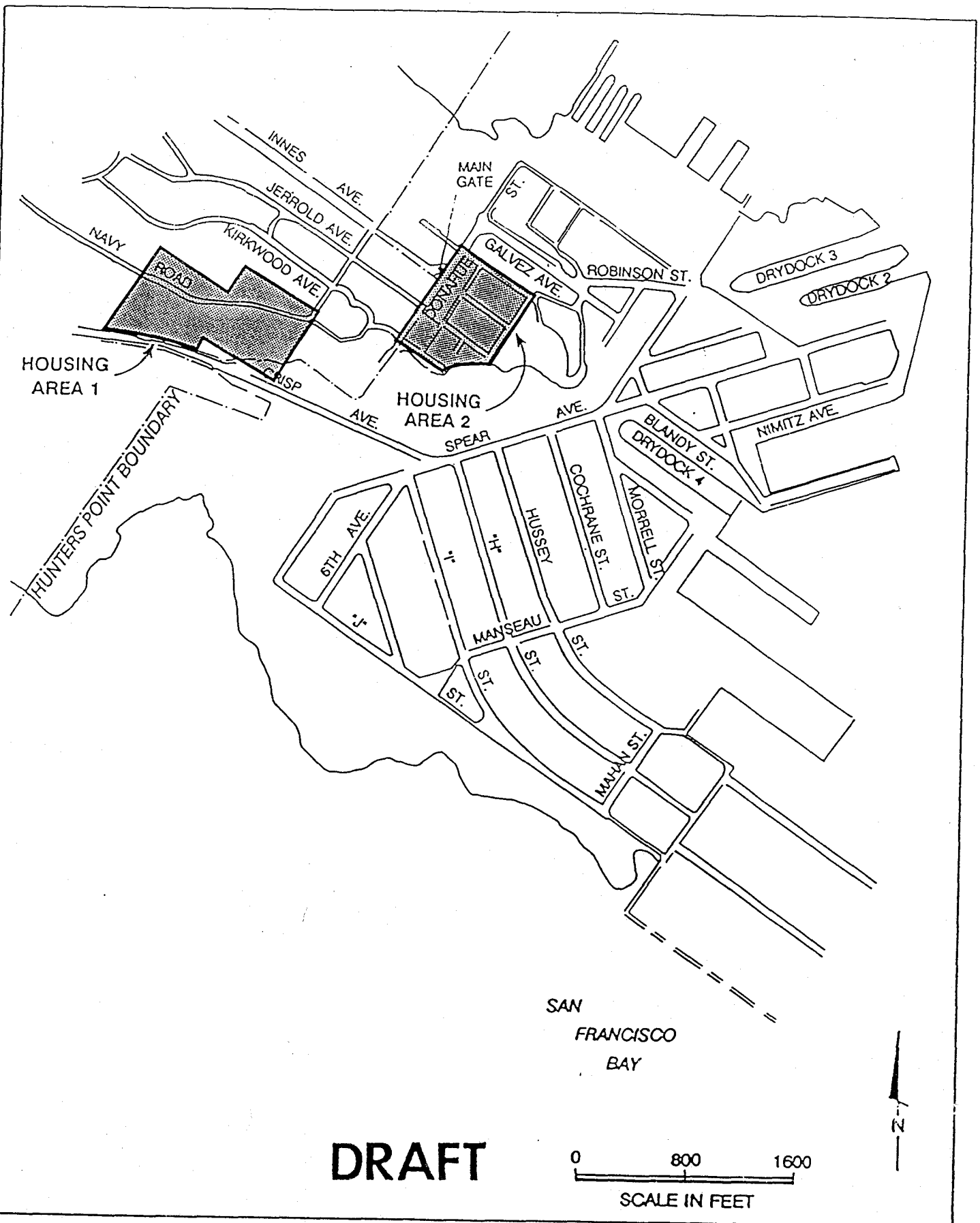
Boring	Depth (ft)	Asbestos (percent)
H-1	0.5	ND*
	5.0	<1**
H-2	1.0	<1
H-4	1.0	ND
	5.0	ND
H-5	Surface	ND
H-7	Surface	ND
H-9	2.0	ND
H-10	1.5	ND
H-11	1.5	ND
H-12	1.5	ND
	4.5	ND
H-13	1.5	ND
	5.0	ND
H-14	0.5	5-10
H-16	1.5	ND

*ND = Not detected (by polarized light microscopy)

**Asbestos observed, but at concentrations less than the method quantification limit of 1%.

ILLUSTRATIONS

105649



Harding Lawson Associates
Engineers and Geoscientists

Location Map
Housing Areas 1 and 2
Ex-Hunters Point Naval Shipyard

PLATE
1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RHC	2176.126.02		10/87		

EXPLANATION

Qsr Slope Debris and Ravine Fill

Contact between geologic units

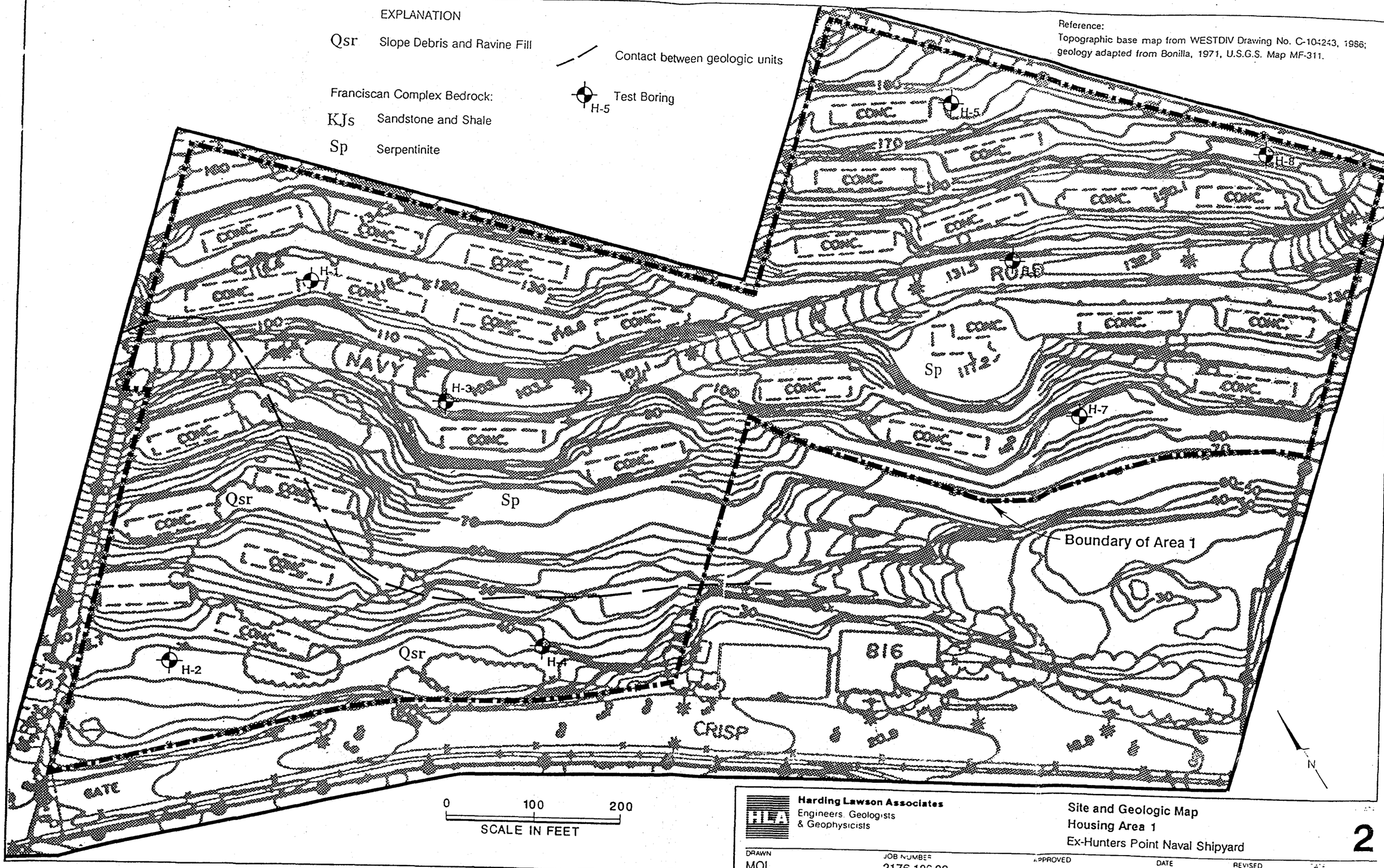
Franciscan Complex Bedrock:

Test Boring H-5

KJs Sandstone and Shale

Sp Serpentinite

Reference:
Topographic base map from WESTDIV Drawing No. C-104243, 1986; geology adapted from Bonilla, 1971, U.S.G.S. Map MF-311.

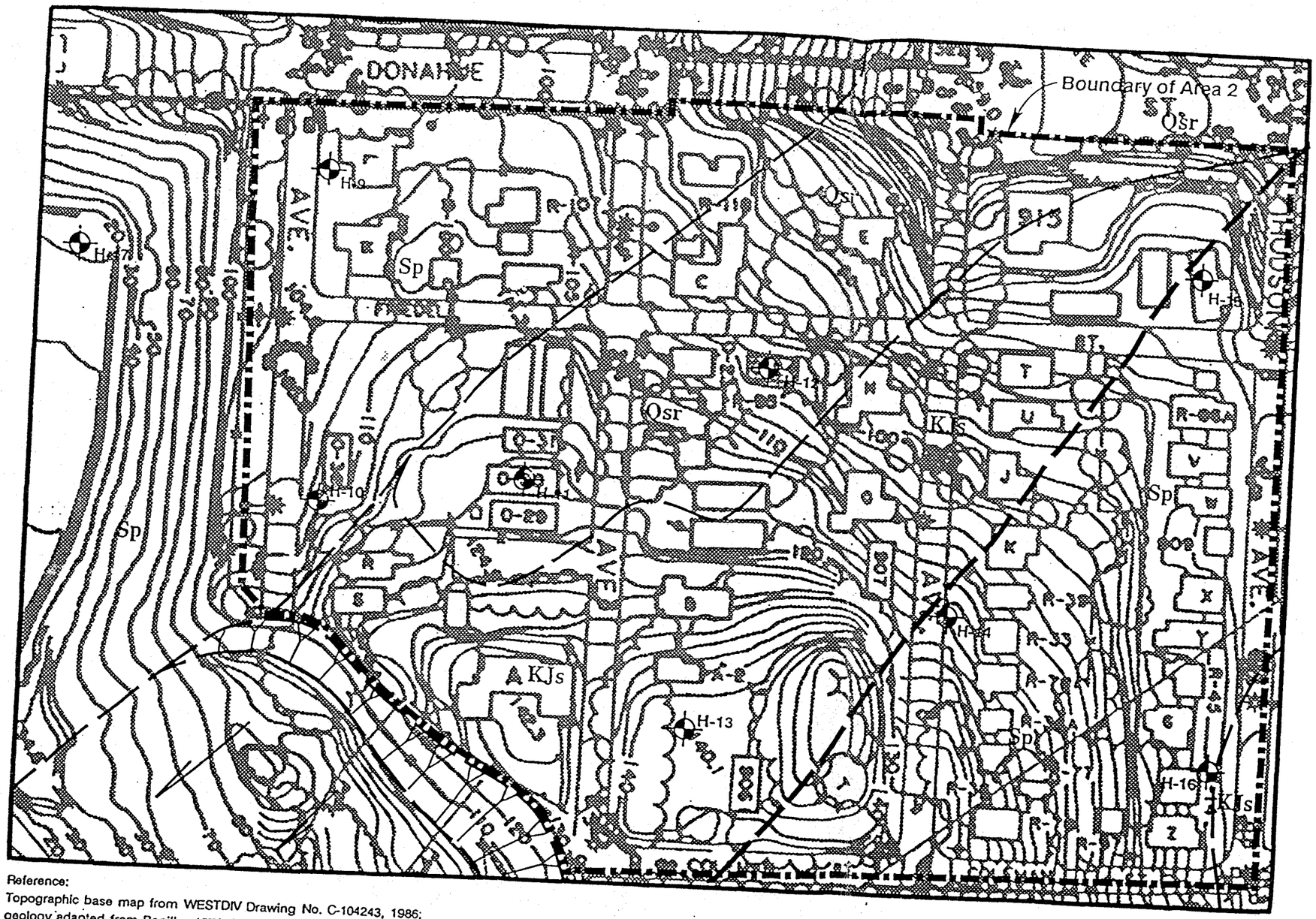


Harding Lawson Associates
Engineers, Geologists & Geophysicists

Site and Geologic Map
Housing Area 1
Ex-Hunters Point Naval Shipyard

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
MOI	2176,126.02		10/87		

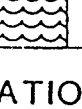
2



Reference:
Topographic base map from WESTDIV Drawing No. C-104243, 1986;
geology adapted from Bonilla, 1971, U.S.G.S. Survey Map MF-311.

DRAFT

Harding Lawson Associates Engineers, Geologists & Geophysicists		Site and Geologic Map Housing Area 2 Ex-Hunters Point Naval Shipyard			3
DRAWN MOI	JOB NUMBER 2176,126.02	APPROVED	DATE 10/87	REVISED	DATE

MAJOR DIVISIONS					TYPICAL NAMES
COARSE–GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN No 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC		CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE–GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL		ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS

UNIFIED SOIL CLASSIFICATION – ASTM D2487-85

Perm	—	Permeability
Consol	—	Consolidation
LL	—	Liquid Limit (%)
PI	—	Plastic Index (%)
G_s	—	Specific Gravity
MA	—	Particle Size Analysis
■	—	"Undisturbed" Sample
☒	—	Bulk or Classification Sample

Shear Strength (psf) ↓		Confining Pressure ↓		
TxUU (FM) or (S)	3200	(2600)	—	Unconsolidated Undrained Triaxial Shear (field moisture or saturated)
TxCU (P)	3200	(2600)	—	Consolidated Undrained Triaxial Shear (with or without pore pressure measurement)
TxCD	3200	(2600)	—	Consolidated Drained Triaxial Shear
SSCU (P)	3200	(2600)	—	Simple Shear Consolidated Undrained (with or without pore pressure measurement)
SSCD	3200	(2600)	—	Simple Shear Consolidated Drained
DSCD	2700	(2000)	—	Consolidated Drained Direct Shear
UC	470		—	Unconfined Compression
LVS	700		—	Laboratory Vane Shear

KEY TO TEST DATA

DRAFT

Harding Lawson Associates
Engineers and Geoscientists

Soil Classification Chart and Key to Test Data
Housing Area 1 and 2
Ex-Hunters Point Naval Shipyard

PLATE 4

DRAWN | JOB NUMBER 6196.196.00 | APPROVED | DATE | REVISED | DATE

I CONSOLIDATION OF SEDIMENTARY ROCKS; usually determined from unweathered samples. Largely dependent on cementation.

U = unconsolidated
P = poorly consolidated
M = moderately consolidated
W = well consolidated

II BEDDING OF SEDIMENTARY ROCKS

Splitting Property	Thickness	Stratification
Massive	Greater than 4.0 ft.	very thick bedded
Blocky	2.0 to 4.0 ft.	thick-bedded
Slabby	0.2 to 2.0 ft.	thin-bedded
Flaggy	0.05 to 0.2 ft.	very thin-bedded
Shaly or platy	0.01 to 0.05 ft.	laminated
Papery	less than 0.01 ft.	thinly laminated

III FRACTURING

Intensity	Size of Pieces in Feet
Very little fractured	Greater than 4.0
Occasionally fractured	1.0 to 4.0
Moderately fractured	0.5 to 1.0
Closely fractured	0.1 to 0.5
Intensely fractured	0.05 to 0.1
Crushed	Less than 0.05

IV HARDNESS

1. **Soft** — Reserved for plastic material alone
2. **Low hardness** — can be gouged deeply or carved easily with a knife blade
3. **Moderately hard** — can be readily scratched by a knife blade; scratch leaves a heavy trace of dust and is readily visible after the powder has been blown away
4. **Hard** — can be scratched with difficulty; scratch produces little powder and is often faintly visible.
5. **Very hard** — cannot be scratched with knife blade; leaves a metallic streak.

V STRENGTH

1. **Plastic** or very low strength
2. **Friable** — crumbles easily by rubbing with fingers
3. **Weak** — An unfractured specimen of such material will crumble under light hammer blows.
4. **Moderately strong** — Specimen will withstand a few heavy hammer blows before breaking.
5. **Strong** — Specimen will withstand a few heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments.
6. **Very strong** — Specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments.

VI **WEATHERING** — The physical and chemical disintigration and decomposition of rocks and minerals by natural processes such as oxidation, reduction, hydration, solution, carbonation, and freezing and thawing.

D. **Deep** — Moderate to complete mineral decomposition; extensive disintegration; deep and thorough discoloration; many fractures, all extensively coated or filled with oxides, carbonates and/or clay or silt.
M. **Moderate** -- Slight change or partial decomposition of minerals; little disintegration; cementation little to unaffected. Moderate to occasionally intense discoloration. Moderately coated fractures.
L. **Little** — No megascopic decomposition of minerals; little or no effect on normal cementation. Slight and intermittent, or localized discoloration. Few stains on fracture surfaces.
F. **Fresh** — Unaffected by weathering agents. No disintegration or discoloration. Fractures usually less numerous than joints.

DRAFT

LOG OF BORING H-1

Equipment 8" Hollow Auger

Elevation 117.0 ft* Date 9/8/87

Laboratory Tests	Blows/foot**	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample
	27					0	
	10					5	
						10	
						15	

DARK GRAY-BROWN SILT (ML)
10YR4/2, very stiff, dry with 20-30% subangular serpentinite rock fragments to 2" dia.

becoming stiff below 5 ft
bottom of boring at 6.0 ft

no free water encountered

* Datum: Mean Sea Level, WESTDIV Drwg. No. C-104243
** Converted to Equivalent Std Penetration (N) Blows/ft

LOG OF BORING H-2

Equipment 8" Hollow Auger

Elevation 37.0 ft Date 9/8/87

Depth (ft)	Sample
0	
5	
10	
15	

14	
41	

DARK BROWN CLAYEY SILT (ML)
7.5YR3/2, stiff, moist

color change to BROWN 10YR5/3, hard, dry to moist, with 10% fine grained sand
bottom of boring at 5.5 ft

no free water encountered

DRAFT

Harding Lawson Associates
Engineers and Geoscientists

Logs of Borings H-1 and H-2
Housing Areas 1 and 2
Ex-Hunters Point Naval Shipyard

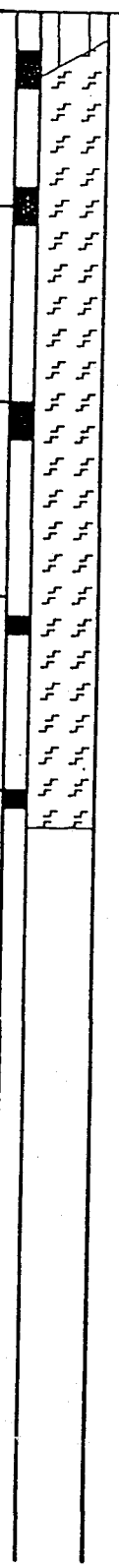
PLATE 6

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	2176, 126.02		10/87		

Equipment 8" Hollow Auger

Elevation 103.0 ft Date 9/8/87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample
	45					0	
	68					5	
	35					10	
	49					15	
	46					20	
						25	
						30	
						35	
						40	



DARK GRAY-BROWN SILT (ML)
10YR3/2, hard, dry
GREEN-GRAY SERPENTINITE,
closely to moderately fractured, moderately hard, weak, deeply weathered
moderately fractured, moderately weathered at 4.5 ft

deeply weathered from 20-20.5 ft
bottom of boring at 21.0 ft

no free water encountered

DRAFT

Harding Lawson Associates
Engineers and Geoscientists

Log of Boring H-3 (sheet 1 of 1)

Housing Areas 1 and 2
Ex-Hunters Point Naval Shipyard

PLATE 7

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	2176, 126.02		10/87		

LOG OF BORING H-4

Equipment 8" Hollow Auger

Elevation 38.0 ft Date 9/8/87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample
	28					0	
	43					5	
						10	
						15	

DARK GRAY-BROWN SILT (ML) 10YR3/2, very stiff, dry with angular to subangular rock fragments to 1 1/4" dia.

YELLOW-BROWN SILTY SAND (SM) 2.5YR6/6, dense, moist, fine to medium grained

bottom of boring at 5.5 ft

no free water encountered

LOG OF BORING H-5

Equipment 8" Hollow Auger

Elevation 175.0 ft Date 9/4/87

Depth (ft)	Sample
0	
5	
10	
15	

GRAY-BROWN SILT (ML) 2.5YR5/2, hard, dry

GREEN-GRAY SERPENTINITE, closely to moderately fractured, hard, moderately strong, moderately weathered

bottom of boring at 5.0 ft

no free water encountered

DRAFT

Harding Lawson Associates
Engineers and Geoscientists

Logs of Borings H-4 and H-5
Housing Areas 1 and 2
Ex-Hunters Point Naval Shipyard

PLATE 8

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	2176, 126.02		10/87		

Equipment 8" Hollow Auger

Elevation 132.0 ft Date 9/8/87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample
	38					0	
	79					5	
	41					10	
	42					15	
	47					20	
						25	
						30	
						35	
						40	

ASPHALT PAVEMENT AND GRAVEL BASEROCK

RED-BROWN SILT (ML) 5YR5/3, very stiff, dry, 20% subrounded pebbles to 1 1/4" dia.

GRAY-GREEN SERPENTINITE, closely fractured, moderately hard, weak, moderately weathered

crushed to intensely fractured and moderately to deeply weathered at 10 ft

moderately fractured and moderately weathered at 15 ft

bottom of boring at 21.5

no free water encountered

DRAFT

Harding Lawson Associates
Engineers and Geoscientists

Log of Boring H-6 (sheet 1 of 1)

Housing Areas 1 and 2

Ex-Hunters Point Naval Shipyard

PLATE 9

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	2176, 126.02		10/87		

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample

LOG OF BORING H-7

Equipment Hand Sampling

Elevation -0.0 ft Date 9/10/87

0

GRAY-BROWN SILT (ML), medium stiff, dry
bottom of boring at 0.8 ft
(sample collected at surface for asbestos analysis)

no free water encountered

5

10

15

LOG OF BORING H-8

Equipment 8" Hollow Auger

Elevation 158.0 ft Date 9/4/87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample
	39					0	
	41					5	

DARK GREEN SERPENITNITE,
closely to moderately fractured, hard, moderately strong, little weathered
bottom of boring at 4.5 ft

no free water encountered

10

15

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Harding Lawson Associates
Engineers and Geoscientists

Logs of Borings H-7 and H-8
Housing Areas 1 and 2
Ex-Hunters Point Naval Shipyard

PLATE 10

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	2176, 126.02		10/87		

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample
	16					0	
	25					5	
						10	
						15	

LOG OF BORING H-9

Equipment 8" Hollow Auger

Elevation 105.0 ft Date 9/4/87

BROWN SANDY SILT (ML) 10YR5/3, very stiff, dry with 10% subangular rock fragments to 3/4" dia.

DARK YELLOW-BROWN CLAYEY SILT (ML) 10YR4/4, stiff, moist

DARK GREEN-GRAY SERPENTINITE, intensely fractured, low hardness, weak, deeply weathered

bottom of boring at 5.5 ft

no free water encountered

Depth (ft)	Sample	Blows/foot	
0			
5		20	
		27	
10			
15			

LOG OF BORING H-10

Equipment 8" Hollow Auger

Elevation 110.0 ft Date 9/4/87

YELLOW-RED SILTY SAND (SM) 5YR4/6, medium dense, dry, fine to very fine grained

GREEN-GRAY GREENSTONE, closely fractured, moderately hard, weak, moderately weathered

bottom of boring ft 4.5 ft

no free water encountered

DRAFT

Harding Lawson Associates
Engineers and Geoscientists

Logs of Borings H-9 and H-10
Housing Areas 1 and 2
Ex-Hunters Point Naval Shipyard

PLATE 11

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	2176, 126.02		10/87		

Equipment 8" Hollow Auger

Elevation 121.0 ft Date 9/3/87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample
	14					0	
	16					5	
	27					10	
	27					15	
	39					20	
						25	
						30	
						35	
						40	

DARK GRAY-BROWN SILT (ML)
2.5Y4/2, stiff, dry with concrete rubble, (fill)

GREEN-BROWN GREENSTONE, closely to intensely fractured, moderately hard, weak, moderately to deeply weathered

moderately fractured, hard, moderately strong, little weathered at 20 ft

bottom of boring at 20.5 ft

no free water encountered

DRAFT

Harding Lawson Associates
Engineers and Geoscientists

Log of Boring H-11 (sheet 1 of 1)

Housing Areas 1 and 2

Ex-Hunters Point Naval Shipyard

PLATE 12

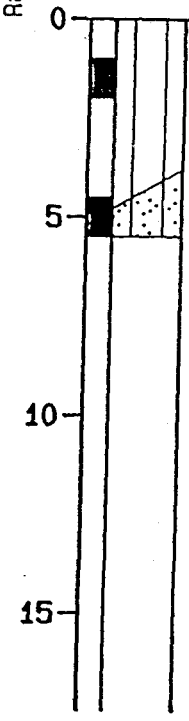
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	2176, 126.02		10/87		

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample

LOG OF BORING H-12

Equipment 8" Hollow Auger

Elevation 103.0 ft Date 9/4/87



	11					0	
	14					5	
						10	
						15	

BROWN SILT (ML) 10YR4/3, stiff, dry

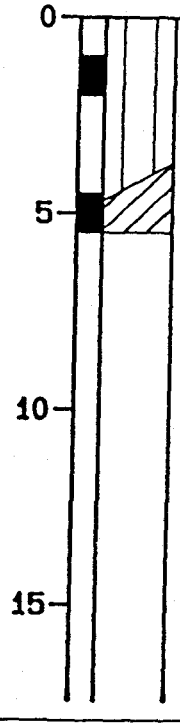
YELLOW-BROWN SILTY SAND (SM) 10YR5/6, medium dense, moist, fine to medium grained
bottom of boring at 5.5 ft

no free water encountered

LOG OF BORING H-13

Equipment 8" Hollow Auger

Elevation 140.0 ft Date 9/4/87



	16					0	
	25					5	
						10	
						15	

BROWN CLAYEY SILT (ML) 10YR4/3, stiff, dry

GREEN-BROWN SILTY CLAY (CL) 5Y4/2, very stiff, dry to moist
bottom of boring at 5.5 ft

no free water encountered

DRAFT

Harding Lawson Associates
Engineers and Geoscientists

Logs of Borings H-12 and H-13
Housing Areas 1 and 2
Ex-Hunters Point Naval Shipyard

PLATE 13

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	2176, 126.02		10/87		

Equipment 8" Hollow Auger

Elevation 114.0 ft Date 9/3/87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample	
	14					0		GRAY-BROWN SILT (ML) 2.5R5/2, stiff, dry greenstone boulder from 1-2 ft
	15							
	41					5		DARK GRAY CLAYEY SILT (ML) 2.5YN3, hard, dry (deeply weathered bedrock?)
	25					10		YELLOW-BROWN SERPENTINITE intensely fractured, low hardness, weak, deeply weathered color change to DARK GRAY at 10 ft
	47					15		color change to DARK GREEN and BLACK, pervasively sheared at 15.3 ft drilling refusal at 17.0 ft no free water encountered
						20		
						25		
						30		
						35		
						40		

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Harding Lawson Associates
Engineers and Geoscientists

Log of Boring H-14 (sheet 1 of 1)

Housing Areas 1 and 2

Ex-Hunters Point Naval Shipyard

PLATE **14**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	2176, 126.02		10/87		

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample
	10					0	
	4					5	
						10	
						15	

LOG OF BORING H-15

Equipment 8" Hollow Auger

Elevation 81.0 ft Date 9/4/87

DARK GREEN-GRAY SERPENTINITE, intensely fractured, low hardness, weak, moderately weathered

becoming crushed, with abundant clay seams at 4.5 ft
bottom of boring at 5.5'

no free water encountered

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample
	22					0	
	17					5	
						10	
						15	

LOG OF BORING H-16

Equipment 8" Hollow Auger

Elevation 84.0 ft Date 9/4/87

DARK YELLOW-BROWN SANDY CLAY (CL) 10YR4/6, very stiff, dry.

moist at 4.5 ft
bottom of boring at 5.5 ft

no free water encountered

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Harding Lawson Associates
Engineers and Geoscientists

Logs of Borings H-15 and H-16
Housing Areas 1 and 2
Ex-Hunters Point Naval Shipyard

PLATE 15

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	2176.126.02		10/87		

Equipment 8" Hollow Auger

Elevation ft Date 9/10/87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Core Recov. %/RQD	Drilling Rate (min/ft)	Depth (ft)	Sample
	46					0	
	41					5	
						10	
						15	
						20	
						25	
						30	
						35	
						40	

LIGHT GREEN SERPENTINITE, intensely fractured, low hardness, weak, deeply to moderately weathered little weathered, with talc seams at 4.0 ft

drilling refusal at 35 ft

no free water encountered

DRAFT

Harding Lawson Associates
Engineers and Geoscientists

Log of Boring H-17 (sheet 1 of 1)

Housing Areas 1 and 2

Ex-Hunters Point Naval Shipyard

PLATE 16

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	2176, 126.02		10/87		

Appendix A

LABORATORY REPORT OF CHEMICAL ANALYSES
CURTIS & TOMPKINS, LTD.

LABORATORY CERTIFICATE

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
290 Division Street, San Francisco, CA 94103, Phone (415) 861-1863

Laboratory No. > 13410, 13425, 13434,
Preliminary No. 13465, 13549, 13554, 13578

Reported > 10/27/87
Sampled
Received > SEPTEMBER 1987

For > HARDING LAWSON ASSOCIATES

Report on > SOIL & WATER SAMPLES FROM HUNTERS POINT

Mark > Job Location: HUNTERS POINT
HLA Job Number: 02176,126.02, 02176,128.02

See Attached Results

Laboratory Director

Curtis & Tompkins, Ltd.

CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02
02176,128.02 Hunters Point

DATE REPORTED: 10/23/87

Polychlorinated Biphenyls (PCBs) by EPA Method 8080

LAB ID	HLA ID	PCBs (mg/kg)	PCB Type
13410-1	8711-1.0	ND(1)	---
13410-2	8714-3.0	ND(1)	---
13425-5	8709-1.5	ND(1)	---
13425-7	8710-1.0	ND(1)	---
13425-9	8712-1.0	ND(1)	---
13425-11	8713-1.0	ND(1)	---
13425-15	8716-1.0	ND(1)	---
13434-1	8703-1.0	ND(1)	---
13434-3	8706-1.0	ND(1)	---
13434-5	8701-1.0	ND(1)	---
13434-7	8704-1.5	ND(1)	---
13434-9	8702-1.5	ND(1)	---
13465-3	87-05-S1	ND(1)	---
13465-4	87-070.3	ND(1)	---
13578-12	SP10-1.0	0.28	PCB 1260
13578-13	SP10-3.0	0.07	PCB 1260
13578-14	SP07-1.0	0.51	PCB 1260
13578-16	SP08-1.0	0.25	PCB 1260
13578-18	SP09-1.0	0.06	PCB 1260
13578-20	SP09-2.5	ND(0.05)	---
13578-22	SP-SRF-1	11,000	PCB 1260
13578-24	SP11-1.0	0.23	PCB 1260
13578-25	SP11-3.0	ND(0.05)	---
13578-26	SP-SRF-3	0.64	PCB 1260

ND = Not Detected; Limit of Detection indicated in parentheses.

QA/QC Summary:

Date Received	Date Analyzed	Job #	%RPD	%Spike Recovery
09/03/87	9/9-10/87	13410	10	82
09/04/87	09/18/87	13425	<1	98
09/08/87	09/18/87	13434	<1	98
09/11/87	09/18/87	13465	<1	98
09/28/87	10/05/87	13578	7	89

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-5
CLIENT: Harding Lawson Associates
CLIENT ID: 8701-1.0
JOB NUMBER: 02176.126,02

DATE RECEIVED: 09/08/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	25.2	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	552	2.0
Cobalt	159	2.0
Copper	7.4	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	2500	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	37.4	2.0
Zinc	32.0	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	116
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	6.0	75	Nickel	16.0	77
Beryllium	<1.0	85	Selenium	<1.0	118
Cadmium	<1.0	72	Silver	<1.0	75
Chromium	21.0	91	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	94
Copper	18.0	83	Zinc	15.0	94
Lead	<1.0	74			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-5
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8701-1.0

DATE RECEIVED: 09/08/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	100
Toluene-d8:	93
Bromofluorobenzene	104

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-5
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8701-1.0

DATE RECEIVED: 09/08/87
DATE ANALYZED: 10/08/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

	RESULT mg/kg	LOD mg/kg
ACID COMPOUNDS		
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13434-5
CLIENT ID: 8701-1.0

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	55	2-Flourobiphenyl	51
2,4,6-tribromophenol	108	Terphenyl	59
Nitrobenzene-d5	55		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-6
CLIENT: Harding Lawson Associates
CLIENT ID: 8701-5.5
JOB NUMBER: 02176,126.02

DATE RECEIVED: 09/08/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	34.6	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	352	2.0
Cobalt	160	2.0
Copper	6	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	2400	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	37.8	2.0
Zinc	45.8	2.0
MERCURY EPA 7471		
Mercury	0.06	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	116
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	6.0	75	Nickel	16.0	77
Beryllium	<1.0	85	Selenium	<1.0	118
Cadmium	<1.0	72	Silver	<1.0	75
Chromium	21.0	91	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	94
Copper	18.0	83	Zinc	15.0	94
Lead	<1.0	74			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-6
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8701-5.5

DATE RECEIVED: 09/08/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	101
Toluene-d8:	94
Bromofluorobenzene	107

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-6
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8701-5.5

DATE RECEIVED: 09/08/87
DATE ANALYZED: 10/08/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13434-6
CLIENT ID: 8701-5.5

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	7.0	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	54	2-Flourobiphenyl	56
2,4,6-tribromophenol	129	Terphenyl	55
Nitrobenzene-d5	59		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-9
CLIENT: Harding Lawson Associates
CLIENT ID: 8702-1.5
JOB NUMBER: 02176,126.02

DATE RECEIVED: 09/08/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/23/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	76.2	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	199	2.0
Cobalt	97.4	2.0
Copper	4.6	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	306	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	44.2	2.0
Zinc	17	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	116
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	6.0	75	Nickel	16.0	77
Beryllium	<1.0	85	Selenium	<1.0	118
Cadmium	<1.0	72	Silver	<1.0	75
Chromium	21.0	91	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	94
Copper	18.0	83	Zinc	15.0	94
Lead	<1.0	74			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-9
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8702-1.5

DATE RECEIVED: 09/08/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	103
Toluene-d8:	94
Bromofluorobenzene	106

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-9
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8702-1.5

DATE RECEIVED: 09/08/87
DATE ANALYZED: 10/08/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13434-9
CLIENT ID: 8702-1.5

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	71	2-Flourobiphenyl	64
2,4,6-tribromophenol	130	Terphenyl	94
Nitrobenzene-d5	76		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-10
CLIENT: Harding Lawson Associates
CLIENT ID: 8702-5.0
JOB NUMBER: 02176,126.02

DATE RECEIVED: 09/08/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/23/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	77	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	124	2.0
Cobalt	105	2.0
Copper	6	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	362	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	44.8	2.0
Zinc	26.4	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	116
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	6.0	75	Nickel	16.0	77
Beryllium	<1.0	85	Selenium	<1.0	118
Cadmium	<1.0	72	Silver	<1.0	75
Chromium	21.0	91	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	94
Copper	18.0	83	Zinc	15.0	94
Lead	<1.0	74			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-10
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8702-5.0

DATE RECEIVED: 09/08/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	102
Toluene-d8:	96
Bromofluorobenzene	104

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-10
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8702-5.0

DATE RECEIVED: 09/08/87
DATE ANALYZED: 10/08/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13434-10
CLIENT ID: 8702-5.0

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	63	2-Flourobiphenyl	56
2,4,6-tribromophenol	128	Terphenyl	92
Nitrobenzene-d5	65		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-1
CLIENT: Harding Lawson Associates
CLIENT ID: 8703-1.0
JOB NUMBER: 02176,126.02

DATE RECEIVED: 09/08/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	8	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	191	2.0
Cobalt	134	2.0
Copper	ND	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	1800	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	17.4	2.0
Zinc	18.8	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	116
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	6.0	75	Nickel	16.0	77
Beryllium	<1.0	85	Selenium	<1.0	118
Cadmium	<1.0	72	Silver	<1.0	75
Chromium	21.0	91	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	94
Copper	18.0	83	Zinc	15.0	94
Lead	<1.0	74			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-1
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8703-1.0

DATE RECEIVED: 09/08/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	100
Toluene-d8:	99
Bromofluorobenzene	102

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-1
CLIENT: Hafding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8703-1.0

DATE RECEIVED: 09/08/87
DATE ANALYZED: 10/08/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

	RESULT mg/kg	LOD mg/kg
ACID COMPOUNDS		
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13434-1
CLIENT ID: 8703-1.0

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	73	2-Flourobiphenyl	63
2,4,6-tribromophenol	113	Terphenyl	60
Nitrobenzene-d5	64		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-7
CLIENT: Harding Lawson Associates
CLIENT ID: 8704-1.5
JOB NUMBER: 02176,126.02

DATE RECEIVED: 09/08/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/23/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	54.8	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	456	2.0
Cobalt	129	2.0
Copper	7.8	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	740	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	51	2.0
Zinc	30.0	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	116
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	6.0	75	Nickel	16.0	77
Beryllium	<1.0	85	Selenium	<1.0	118
Cadmium	<1.0	72	Silver	<1.0	75
Chromium	21.0	91	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	94
Copper	18.0	83	Zinc	15.0	94
Lead	<1.0	74			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-7
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8704-1.5

DATE RECEIVED: 09/08/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	102
Toluene-d8:	93
Bromofluorobenzene	104

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-7
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8704-1.5

DATE RECEIVED: 09/08/87
DATE ANALYZED: 10/08/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13434-7
CLIENT ID: 8704-1.5

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	56	2-Flourobiphenyl	59
2,4,6-tribromophenol	133	Terphenyl	83
Nitrobenzene-d5	67		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-8
CLIENT: Harding Lawson Associates
CLIENT ID: 8704-4.5
JOB NUMBER: 02176,126.02

DATE RECEIVED: 09/08/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/23/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	18.4	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	152	2.0
Cobalt	66.2	2.0
Copper	ND	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	178	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	31.4	2.0
Zinc	14.8	2.0

MERCURY EPA 7471

Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	116
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	6.0	75	Nickel	16.0	77
Beryllium	<1.0	85	Selenium	<1.0	118
Cadmium	<1.0	72	Silver	<1.0	75
Chromium	21.0	91	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	94
Copper	18.0	83	Zinc	15.0	94
Lead	<1.0	74			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-8
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8704-4.5

DATE RECEIVED: 09/08/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	102
Toluene-d8:	95
Bromofluorobenzene	105

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-8
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8704-4.5

DATE RECEIVED: 09/08/87
DATE ANALYZED: 10/08/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-8
CLIENT ID: 8704-4.5

EPA 8270

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	61	2-Flourobiphenyl	58
2,4,6-tribromophenol	119	Terphenyl	76
Nitrobenzene-d5	70		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13465-3
CLIENT: Harding Lawson Associates
CLIENT ID: 87-05-S1
JOB NUMBER: 02176,126.02

DATE RECEIVED: 09/11/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/23/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	36.2	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	752	2.0
Cobalt	154	2.0
Copper	16.6	2.0
Lead	48	2.0
Molybdenum	ND	2.0
Nickel	2100	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	58.4	2.0
Zinc	66.8	2.0
MERCURY EPA 7471		
Mercury	0.08	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	70
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	70
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.2	70	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	105
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13465-3
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 87-05-S1

DATE RECEIVED: 09/11/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	96
Toluene-d8:	102
Bromofluorobenzene	102

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13465-3
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 87-05-S1

DATE RECEIVED: 09/11/87
DATE ANALYZED: 10/08/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13465-3
CLIENT ID: 87-05-S1

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	62	2-Flourobiphenyl	44
2,4,6-tribromophenol	91	Terphenyl	33
Nitrobenzene-d5	55		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-3
CLIENT: Harding Lawson Associates
CLIENT ID: 8706-1.0
JOB NUMBER: 02176,126.02

DATE RECEIVED: 09/08/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	35.8	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	396	2.0
Cobalt	146	2.0
Copper	7.6	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	2030	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	25.6	2.0
Zinc	25.2	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	116
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	6.0	75	Nickel	16.0	77
Beryllium	<1.0	85	Selenium	<1.0	118
Cadmium	<1.0	72	Silver	<1.0	75
Chromium	21.0	91	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	94
Copper	18.0	83	Zinc	15.0	94
Lead	<1.0	74			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-3
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8706-1.0

DATE RECEIVED: 09/08/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	102
Toluene-d8:	93
Bromofluorobenzene	104

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-3
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8706-1.0

DATE RECEIVED: 09/08/87
DATE ANALYZED: 10/08/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13434-3
CLIENT ID: 8706-1.0

EPA 8270

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	72	2-Flourobiphenyl	61
2,4,6-tribromophenol	119	Terphenyl	61
Nitrobenzene-d5	66		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13465-4
CLIENT: Harding Lawson Associates
CLIENT ID: 87-070.3
JOB NUMBER: 02176,126.02

DATE RECEIVED: 09/11/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/23/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	42.2	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	548	2.0
Cobalt	150	2.0
Copper	7.2	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	1900	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	53.8	2.0
Zinc	33	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	70
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	70
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.2	70	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	105
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13465-4
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 87-07-0.3

DATE RECEIVED: 09/11/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	97
Toluene-d8:	99
Bromofluorobenzene	101

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13465-4
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 87-07-0.3

DATE RECEIVED: 09/11/87
DATE ANALYZED: 10/08/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

	RESULT mg/kg	LOD mg/kg
ACID COMPOUNDS		
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13465-4
CLIENT ID: 87-070.3

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	60	2-Flourobiphenyl	75
2,4,6-tribromophenol	121	Terphenyl	35
Nitrobenzene-d5	62		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-5
CLIENT: Harding Lawson Associates
CLIENT ID: 8709-1.5
JOB NUMBER: 02176.126,02

DATE RECEIVED: 09/04/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	218	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	135	2.0
Cobalt	136	2.0
Copper	48.0	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	93.8	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	68.8	2.0
Zinc	46.0	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	75
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	75
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	100
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-5
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8709-1.5

DATE RECEIVED: 09/04/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	102
Toluene-d8:	99
Bromofluorobenzene	104

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-5
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8709-1.5

DATE RECEIVED: 09/04/87
DATE ANALYZED: 10/07/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13425-5
CLIENT ID: 8709-1.5

BASE/NEUTRÁL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	49	2-Flourobiphenyl	57
2,4,6-tribromophenol	79	Terphenyl	101
Nitrobenzene-d5	63		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-7
CLIENT: Harding Lawson Associates
CLIENT ID: 8710-1.0
JOB NUMBER: 02176.126,02

DATE RECEIVED: 09/04/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	90.8	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	128	2.0
Cobalt	119	2.0
Copper	7.6	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	89.0	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	70.4	2.0
Zinc	23.8	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	75
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	75
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	100
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-7
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8710-1.0

DATE RECEIVED: 09/04/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	103
Toluene-d8:	97
Bromofluorobenzene	102

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-7
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8710-1.0

DATE RECEIVED: 09/04/87
DATE ANALYZED: 10/07/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

	RESULT mg/kg	LOD mg/kg
ACID COMPOUNDS		
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13425-7
CLIENT ID: 8710-1.0

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	73	2-Flourobiphenyl	67
2,4,6-tribromophenol	96	Terphenyl	60
Nitrobenzene-d5	68		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-8
CLIENT: Harding Lawson Associates
CLIENT ID: 8710-4.0
JOB NUMBER: 02176.126,02

DATE RECEIVED: 09/04/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	3.6	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	856	2.0
Cobalt	109	2.0
Copper	6.4	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	1800	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	37.2	2.0
Zinc	21.8	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	75
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	75
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	100
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-8
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8710-4.0

DATE RECEIVED: 09/04/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-8
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8710-4.0

DATE RECEIVED: 09/04/87
DATE ANALYZED: 10/07/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13425-8
CLIENT ID: 8710-4.0

EPA 8270

BASE/NEUTRÁL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	72	2-Flourobiphenyl	62
2,4,6-tribromophenol	129	Terphenyl	106
Nitrobenzene-d5	73		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13410-1
CLIENT: Harding Lawson Associates
CLIENT ID: 8711-1.0
JOB NUMBER: 02176,126.02

DATE RECEIVED: 09/03/87
DATE ANALYZED: 09/17/87
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	71	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	74.4	2.0
Cobalt	39.0	2.0
Copper	13.0	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	50.6	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	54.8	2.0
Zinc	27.2	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	75
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	75
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	100
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13410-1
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8711-1.0

DATE RECEIVED: 09/03/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	90
Toluene-d8:	80
Bromofluorobenzene	97

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13410-1
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8711-1.0

DATE RECEIVED: 09/03/87
DATE ANALYZED: 09/15/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13410-1
CLIENT ID: 8711-1.0

BASE/NEUTRÁL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	95	2-Flourobiphenyl	110
2,4,6-tribromophenol	108	Terphenyl	75
Nitrobenzene-d5	96		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-9
CLIENT: Harding Lawson Associates
CLIENT ID: 8712-1.0
JOB NUMBER: 02176.126,02

DATE RECEIVED: 09/03/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	101	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	99.4	2.0
Cobalt	53.4	2.0
Copper	7.2	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	79.6	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	43.4	2.0
Zinc	20.8	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	75
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	75
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	100
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-9
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8712-1.0

DATE RECEIVED: 09/04/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	98
Toluene-d8:	100
Bromofluorobenzene	101

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-9
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8712-1.0

DATE RECEIVED: 09/04/87
DATE ANALYZED: 10/07/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13425-9
CLIENT ID: 8712-1.0

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	70	2-Flourobiphenyl	65
2,4,6-tribromophenol	122	Terphenyl	111
Nitrobenzene-d5	71		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-10
CLIENT: Harding Lawson Associates
CLIENT ID: 8712-5.0
JOB NUMBER: 02176.126,02

DATE RECEIVED: 09/04/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	65.4	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	120	2.0
Cobalt	112	2.0
Copper	5.0	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	75.4	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	63.6	2.0
Zinc	20.6	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	75
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	75
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	100
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-10
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8712-5.0

DATE RECEIVED: 09/04/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	101
Toluene-d8:	105
Bromofluorobenzene	97

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-10
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8712-5.0

DATE RECEIVED: 09/04/87
DATE ANALYZED: 10/07/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13425-10
CLIENT ID: 8712-5.0

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	0.33
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	85	2-Flourobiphenyl	69
2,4,6-tribromophenol	108	Terphenyl	60
Nitrobenzene-d5	75		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-11
CLIENT: Harding Lawson Associates
CLIENT ID: 8713-1.0
JOB NUMBER: 02176.126,02

DATE RECEIVED: 09/04/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	75.6	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	162	2.0
Cobalt	113	2.0
Copper	11.6	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	141	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	61.8	2.0
Zinc	23.2	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	75
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	75
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	100
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-11
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8713-1.0

DATE RECEIVED: 09/04/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	100
Toluene-d8:	100
Bromofluorobenzene	99

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-11
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8713-1.0

DATE RECEIVED: 09/04/87
DATE ANALYZED: 10/07/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

	RESULT mg/kg	LOD mg/kg
ACID COMPOUNDS		
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-11
CLIENT ID: 8713-1.0

EPA 8270

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	80	2-Flourobiphenyl	64
2,4,6-tribromophenol	95	Terphenyl	58
Nitrobenzene-d5	70		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-12
CLIENT: Harding Lawson Associates
CLIENT ID: 8713-4.5
JOB NUMBER: 02176.126,02

DATE RECEIVED: 09/04/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	66.4	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	147	2.0
Cobalt	121	2.0
Copper	12.6	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	111	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	78.4	2.0
Zinc	31.2	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	75
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	75
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	100
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-12
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8713-4.5

DATE RECEIVED: 09/04/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	100
Toluene-d8:	97
Bromofluorobenzene	101

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-12
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8713-4.5

DATE RECEIVED: 09/04/87
DATE ANALYZED: 10/07/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13425-12
CLIENT ID: 8713-4.5

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	75	2-Flourobiphenyl	61
2,4,6-tribromophenol	123	Terphenyl	56
Nitrobenzene-d5	70		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13410-2
CLIENT: Harding Lawson Associates
CLIENT ID: 8714-3.0
JOB NUMBER: 02176,126.02

DATE RECEIVED: 09/03/87
DATE ANALYZED: 09/17/87
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	45	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	884	2.0
Cobalt	124	2.0
Copper	12.0	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	2070	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	31.8	2.0
Zinc	24.9	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	75
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	75
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	100
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13410-2
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8714-3.0

DATE RECEIVED: 09/03/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	103
Toluene-d8:	98
Bromofluorobenzene	106

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13410-2
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8714-3.0

DATE RECEIVED: 09/03/87
DATE ANALYZED: 09/15/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

	RESULT mg/kg	LOD mg/kg
ACID COMPOUNDS		
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13410-2
CLIENT ID: 8714-3.0

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	56	2-Flourobiphenyl	72
2,4,6-tribromophenol	90	Terphenyl	88
Nitrobenzene-d5	66		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13410-4
CLIENT: Harding Lawson Associates
CLIENT ID: 8714-4.5
JOB NUMBER: 02176.126,02

DATE RECEIVED: 09/03/87
DATE ANALYZED: 09/17/87
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	47.4	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	452	2.0
Cobalt	129	2.0
Copper	12.4	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	1200	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	32.8	2.0
Zinc	26.8	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	75
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	75
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	100
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13410-4
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8714-4.5

DATE RECEIVED: 09/03/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	105
Toluene-d8:	99
Bromofluorobenzene	102

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13410-4
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8714-4.5

DATE RECEIVED: 09/03/87
DATE ANALYZED: 09/15/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13410-4
CLIENT ID: 8714-4.5

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	65	2-Flourobiphenyl	54
2,4,6-tribromophenol	85	Terphenyl	126
Nitrobenzene-d5	80		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-15
CLIENT: Harding Lawson Associates
CLIENT ID: 8716-1.0
JOB NUMBER: 02176.126,02

DATE RECEIVED: 09/04/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	76.8	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	114	2.0
Cobalt	80.8	2.0
Copper	5.0	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	95.0	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	54.0	2.0
Zinc	21.2	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	75
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	75
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	100
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-15
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8716-1.0

DATE RECEIVED: 09/04/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	101
Toluene-d8:	94
Bromofluorobenzene	101

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-15
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8716-1.0

DATE RECEIVED: 09/04/87
DATE ANALYZED: 10/07/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

LABORATORY NUMBER: 13425-15
CLIENT ID: 8716-1.0

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	67	2-Flourobiphenyl	61
2,4,6-tribromophenol	113	Terphenyl	110
Nitrobenzene-d5	70		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-16
CLIENT: Harding Lawson Associates
CLIENT ID: 8716-5.0
JOB NUMBER: 02176.126,02

DATE RECEIVED: 09/04/87
DATE ANALYZED: 09/23-24/8
DATE REPORTED: 10/19/87

CAM 17 METALS BY ICP SPECTROMETRY: EPA 6010 IN SOIL & WASTES
DIGESTION METHOD: EPA 3010

METALS	RESULTS (mg/Kg)	DETECTION LIMIT (mg/Kg)
Arsenic	ND	20
Antimony	ND	20
Barium	62.0	2.0
Beryllium	ND	2.0
Cadmium	ND	2.0
Chromium (total)	83.2	2.0
Cobalt	47.6	2.0
Copper	4.2	2.0
Lead	ND	2.0
Molybdenum	ND	2.0
Nickel	71.0	2.0
Selenium	ND	20
Silver	ND	2.0
Thallium	ND	20
Vanadium	43.6	2.0
Zinc	15.0	2.0
MERCURY EPA 7471		
Mercury	ND	0.04

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Arsenic	<1.0	97	Mercury	<1.0	92
Antimony	<1.0	75	Molybdenum	<1.0	75
Barium	5.0	84	Nickel	16.0	75
Beryllium	<1.0	76	Selenium	<1.0	118
Cadmium	<1.0	75	Silver	<1.0	75
Chromium	24.0	75	Thallium	<1.0	94
Cobalt	5.0	75	Vanadium	3.0	86
Copper	3.0	83	Zinc	15.0	100
Lead	<1.0	70			

ND = None Detected. mg/Kg = Parts per Million.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-16
CLIENT: Harding Lawson Associates
HLA Job #: 02176,126.02 Hunters Point
CLIENT ID: 8716-5.0

DATE RECEIVED: 09/04/87
DATE REPORTED: 10/23/87

EPA Method 8240: Volatile Organics in Soils & Wastes

COMPOUND	Result ng/g	LOD ng/g
benzene	ND	500
carbon tetrachloride	ND	500
chlorobenzene	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
1,1-dichloroethane	ND	500
1,1,2-trichloroethane	ND	500
1,1,2,2-tetrachloroethane	ND	500
chloroethane	ND	500
2-chloroethylvinyl ether	ND	1000
chloroform	ND	500
1,1-dichloroethene	ND	500
1,2-trans-dichloroethene	ND	500
1,2-dichloropropane	ND	500
1,3-dichloropropene	ND	500
ethylbenzene	ND	500
methylene chloride	ND	1000
chloromethane	ND	500
bromomethane	ND	500
bromoform	ND	500
bromodichloromethane	ND	500
fluorotrichloromethane	ND	500
chlorodibromomethane	ND	500
tetrachloroethene	ND	500
toluene	ND	500
trichloroethene	ND	500
vinyl chloride	ND	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
2-butanone	ND	1000
carbon disulfide	ND	500
2-hexanone	ND	500
4-methyl-2-pentanone	ND	500
styrene	ND	500
vinyl acetate	ND	500
total xylenes	ND	500

QA/QC: Spike Recovery %

1,2 Dichloroethane-d4	103
Toluene-d8:	95
Bromofluorobenzene	103

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-16
CLIENT: Harding Lawson Associates
HLA Job Number: 02176,126.02
CLIENT ID: 8716-5.0

DATE RECEIVED: 09/04/87
DATE ANALYZED: 10/07/87
DATE REPORTED: 10/23/87

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

	RESULT mg/kg	LOD mg/kg
ACID COMPOUNDS		
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	0.66
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.33
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	0.66
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33
4-Bromophenylphenyl ether	ND	0.33

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 13425-16
CLIENT ID: 8716-5.0

EPA 8270

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65
HSL COMPOUNDS		
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	1.65
Aniline	ND	0.33
Benzyl Alcohol	ND	0.33
4-Chloroaniline	ND	0.33
2-Methylnaphthalene	ND	0.33
2-Nitroanline	ND	0.33
3-Nitroaniline	ND	0.33
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	0.33

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Flourophenol	76	2-Flourobiphenyl	56
2,4,6-tribromophenol	74	Terphenyl	65
Nitrobenzene-d5	53		

APPENDIX A
SURFACE INVESTIGATION-PROPOSED HOUSING AREA 1 AND 2

APPENDIX B – LABORATORY REPORT OF ASBESTOS ANALYSES TMA/NORCAL

DRAFT RISK ASSESSMENT, PROPOSED HOUSING AREAS 1 AND 2, VOLUME II

THE ABOVE IDENTIFIED APPENDIX IS NOT AVAILABLE.

EXTENSIVE RESEARCH WAS PERFORMED BY SOUTHWEST DIVISION TO LOCATE THIS APPENDIX. THIS PAGE HAS BEEN INSERTED AS A PLACEHOLDER AND WILL BE REPLACED SHOULD THE MISSING ITEM BE LOCATED.

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DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676

APPENIDX A – SURFACE INVESTIGATION PROPOSED HOUSING AREAS 1 AND 2 EX-HUNTERS POINT NAVAL SHIPYARD

DISTRIBUTION

DRAFT RISK ASSESSMENT, PROPOSED HOUSING AREAS 1 AND 2, VOLUME II

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APPENDIX B

Surface Wind Characteristics at HPA

APPENDIX B

Surface Wind Characteristics at HPA

Surface wind characteristics are a primary concern in designing an airborne chemical sampling program. Wind patterns were determined prior to locating sampling stations. Observations of local wind characteristics during the sampling period provide an indication of local wind fluctuations (Tables 4-1 through Table 4-5). This section describes the surface wind characteristics present at HPA and compares average conditions with conditions encountered on sampling days.

Surface wind flow patterns for the San Francisco Bay Area Air Basin have been characterized by the Aerometric Data Division of the CARB. The northwesterly air flow type (winds blowing out of the northwest) is the dominant wind flow pattern for the San Francisco Bay Area.

Seasonal and annual wind roses (graphical representations of wind direction, speed, and frequency of occurrence plotted on the sixteen points of a compass to resemble the radial pattern of rose petals) based on 18 years of hourly data compiled by the CARB have been plotted by ATT to aid in evaluating the impact of wind characteristics on air sampling at the HPA locations. Winds are commonly described by their prevailing direction, predominant direction, and secondary predominant direction. Prevailing wind direction is the wind direction most frequently observed on the sixteen point compass during a given period. The predominant wind is defined as the mid-point of the three-point sector (group of three contiguous points) of the compass which holds the largest number of total observations.

The speed of the predominant wind is the mean of the speeds of all winds in the predominant sector. Secondary predominant wind direction is the predominant wind direction of the remaining portion of the compass outside of the predominant wind sector.

Examination of the annual surface wind rose for the San Francisco International Airport Area (Plate 4-1) shows the prevailing winds and predominant winds blowing out of the west-northwest, at an average speed of 13.4 miles per hour. The annual average secondary predominant winds blow out of the southwest. All points of the compass are represented at more than six miles per hour average speed, with calm conditions present 4.4 percent of the year.

The seasonal variations of winds recorded at SFO are presented in Plates 4-2 through 4-5. The prevailing wind direction during winter months is west-northwest, at a mean speed of 12.4 miles per hour, as indicated in Plate 4-2. Predominant winds in winter months blow out of the west at 10.5 miles per hour and secondary predominant winds for winter months blow out of the south-southeast. Winds blow from all 16 points of the compass in far more balanced distribution in winter than in other seasons. Calm conditions were present for eight percent of the time during winter months.

Winds during spring months are predominantly out of the west. The prevailing winds during spring months (see Plate 4-3) blow out of the west-northwest at 14.4 miles per hour. Predominant winds are from the west-northwest at 14.4 miles per hour, whereas secondary predominant winds are from the south-south west. Calm conditions

were recorded for 2.8 percent of the spring observation period.

Summer surface wind characteristics (see Plate 4-4) are similar to those of spring, with an even greater occurrence of westerly winds. Prevailing winds are out of the west-northwest at 13.9 miles per hour; predominant winds blow out of the west northwest at 14.4 miles per hour; and secondary predominant winds blow out of the southwest at 10.3 miles per hour. Calm conditions were present for 1.5 per cent of the summer observation period.

Fall surface winds are also dominated by westerly winds and show a fairly even representation of the compass. Prevailing winds are out of the west-northwest at 12 miles per hour. The predominant wind direction for the fall months is west-northwest, with a predominant wind speed of 11.9 miles per hour. Secondary predominant winds are out of the south-southwest at 7.7 miles per hour. Calm conditions are present for 5.5 percent of the fall observation period.

APPENDIX B
SURFACE WIND CHARACTERISTICS AT HPA

TABLE 4-1 THROUGH TABLE 4-5

DRAFT RISK ASSESSMENT, PROPOSED HOUSING AREAS 1 AND 2, VOLUME II

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1220 PACIFIC HIGHWAY
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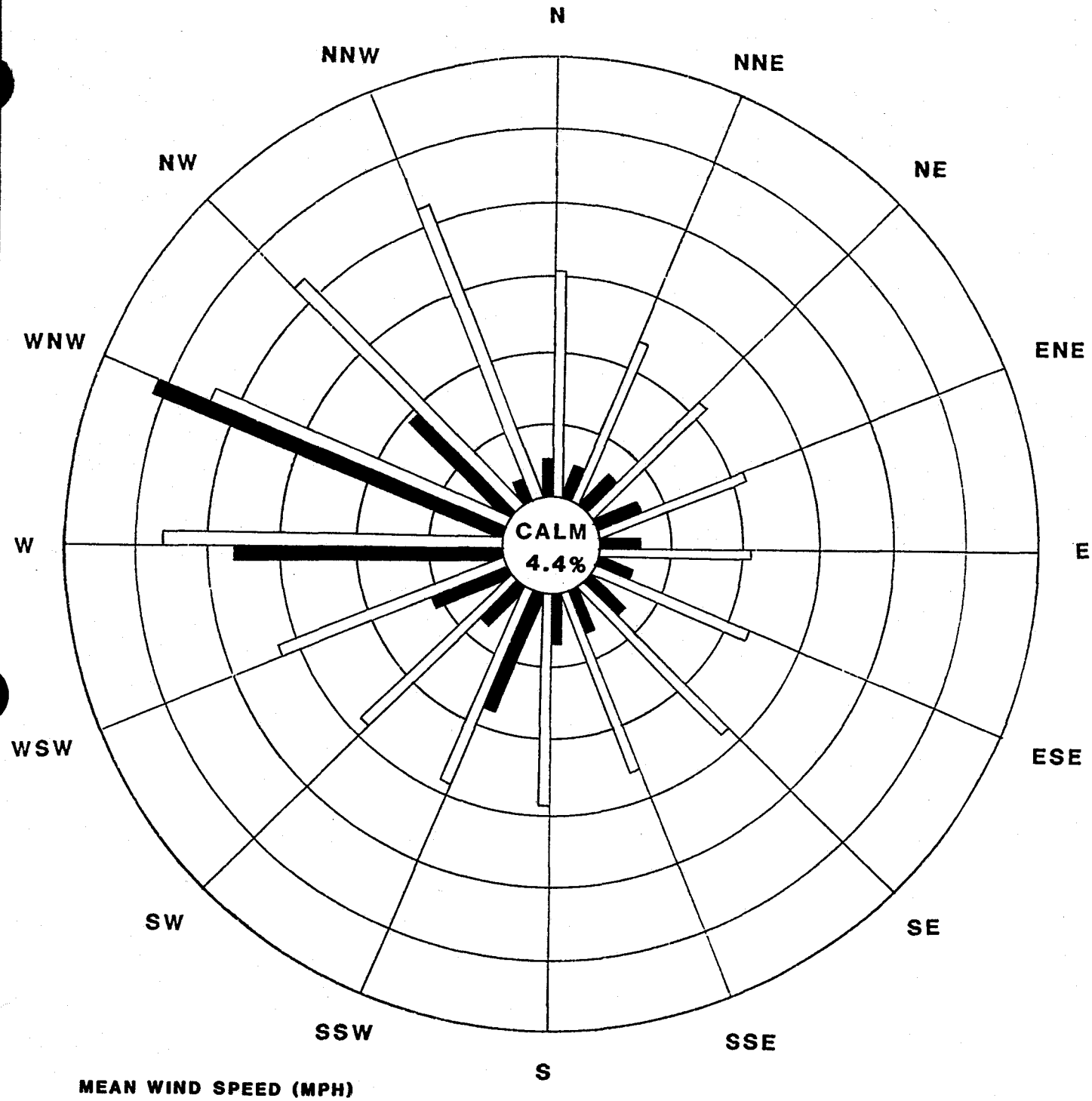


MEAN WIND SPEED (MPH)

0 3 6 9 12 15 18

0 5 10 15 20 25 30

DIRECTION BY PERCENTAGE

SOURCE : CARB 1960-1978

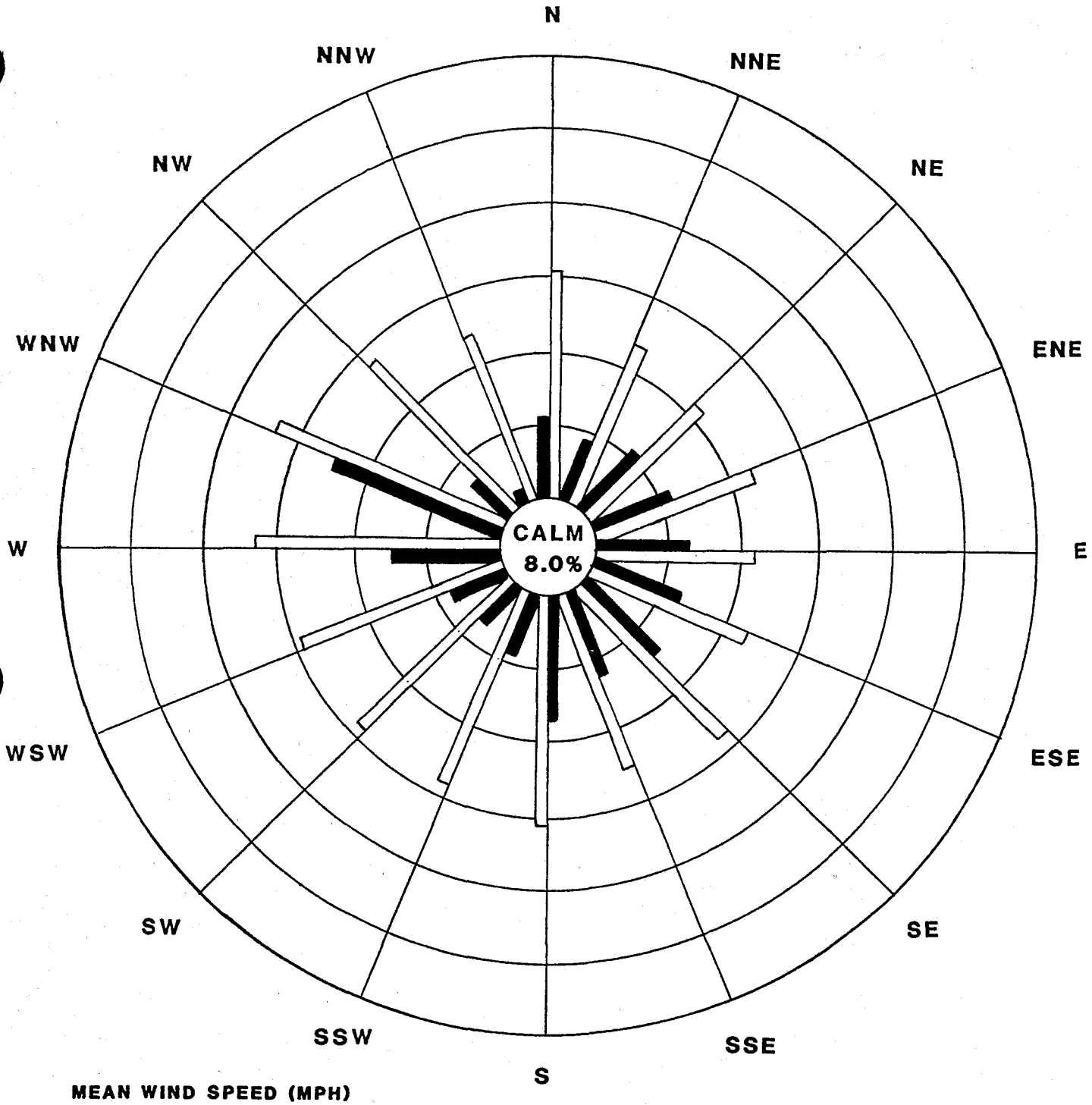
Annual Surface Wind Rose

San Francisco International Airport

ATT Aqua Terra Technologies
Consulting Engineers
& Scientists

HLA - Hunters Point

JOB NUMBER	DATE	PLATE
732.07	10/15/87	B-1



MEAN WIND SPEED (MPH)

0 3 6 9 12 15 18

0 5 10 15 20 25 30

DIRECTION BY PERCENTAGE

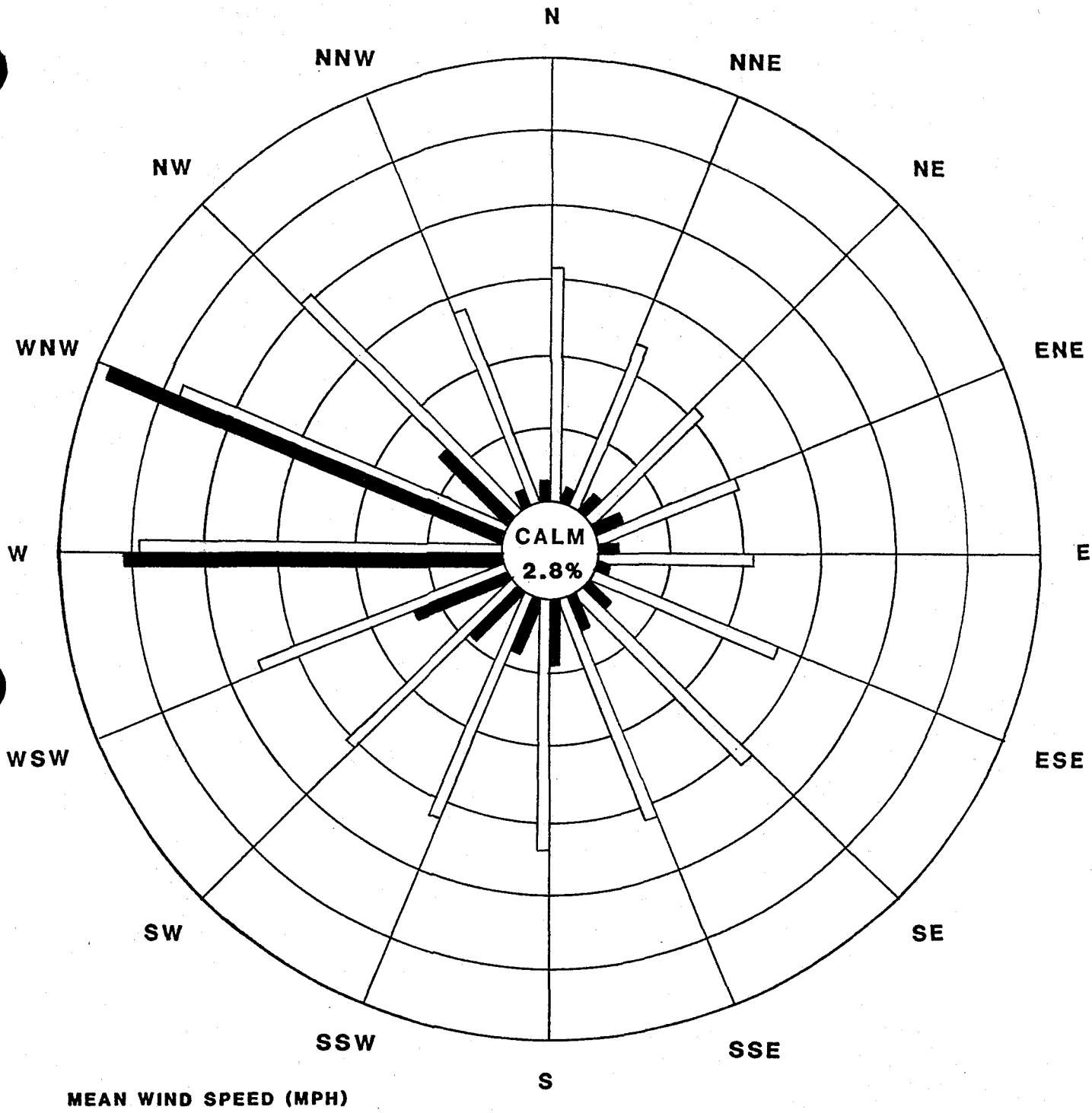
SOURCE : CARB 1960-1978

Surface Wind Rose : Winter
San Francisco International Airport

ATT Aqua Terra Technologies
Consulting Engineers
& Scientists

HLA - Hunters Point

JOB NUMBER	DATE	PLATE
732.07	10/15/87	B-2



MEAN WIND SPEED (MPH)

0 3 6 9 12 15 18

0 5 10 15 20 25 30

DIRECTION BY PERCENTAGE

SOURCE : CARB 1960-1978

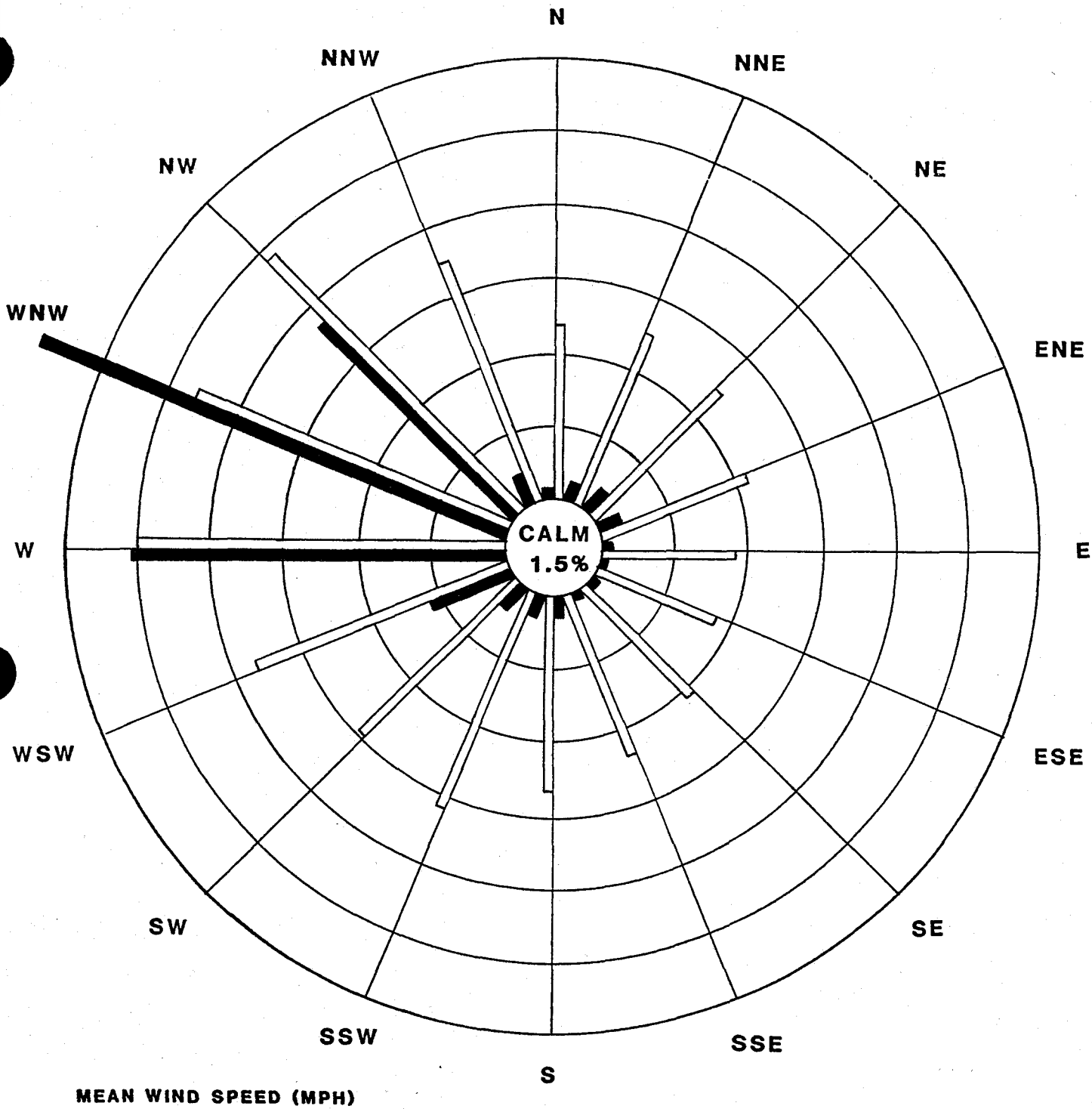
Surface Wind Rose : Spring

San Francisco International Airport

ATT Aqua Terra Technologies
Consulting Engineers
& Scientists

HLA - Hunters Point

JOB NUMBER	DATE	PLATE
732.07	10/15/87	B-3



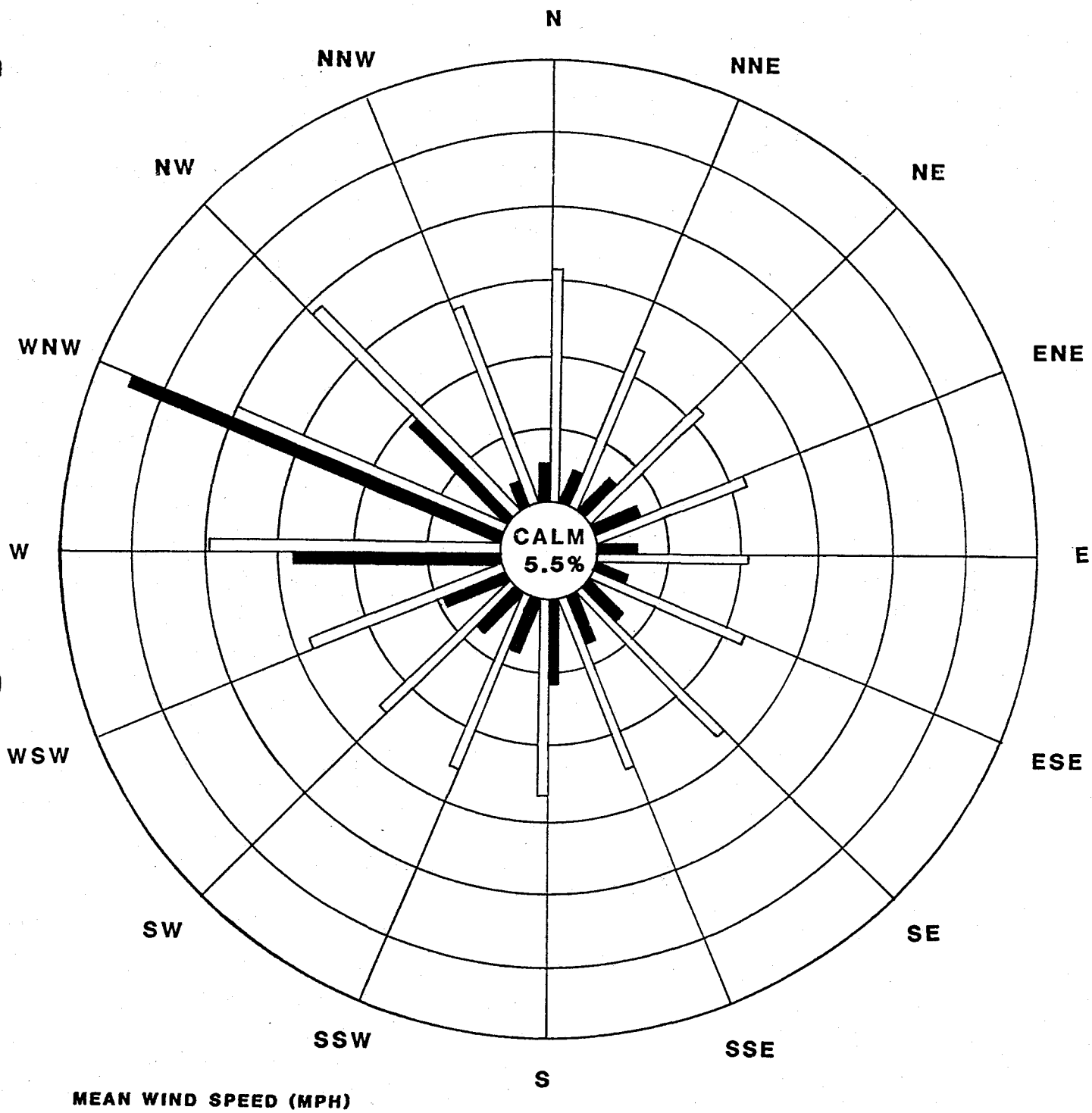
SOURCE : CARB 1960-1978

Surface Wind Rose : Summer
San Francisco International Airport

ATT Aqua Terra Technologies
Consulting Engineers
& Scientists

HLA - Hunters Point

JOB NUMBER	DATE	PLATE
732.07	10/15/87	B-4



MEAN WIND SPEED (MPH)

0 3 6 9 12 15 18

0 5 10 15 20 25 30

DIRECTION BY PERCENTAGE

SOURCE : CARB 1960-1978

Surface Wind Rose : Fall

San Francisco International Airport

ATT Aqua Terra Technologies
Consulting Engineers
& Scientists

HLA - Hunters Point

JOB NUMBER	DATE	PLATE
732.07	10/15/87	B-5

APPENDIX C

Data Chem Laboratories
Air Sample Analysis

Methodology and Laboratory Data: Volatile Organic Compounds

October 1, 1987

ANALYTICAL REPORT

SUBMITTED TO: Tom Mohr

SUBMITTED BY: Lawrence S. Hall

REFERENCE DATA:

Analysis of: Purgeable Organics on Tenax

Identification: 87-2628 and 87-2764

Sample(s): 11

UBTL Laboratory No.: CH-15497 through 15501 and CH-16398 through 16403

The referenced samples were extracted by emptying the tenax out of the sample tubes and extracting it with 1.0 milliliter of methanol and allowing it to equilibrate one hour before analysis. The extracts from the samples were then analyzed for purgeable organics using a dynamic head space concentrator with a 3-phase trap in conjunction with a Finnigan 5100 automated GC/MS/DS.

A separation of the compounds of interest was obtained with a 2 meter x 2 mm ID glass column packed with 1% SP-1000 on 60/80 Carbopack B, using oven temperature programming from 45 °C for 2 minutes to 220 °C at 8 °C per minute.

Internal standards were added to each sample and standard prior to analysis. The standards were obtained from EPA as mixtures. Three standards were analyzed at 2.0 5.0, and 10.0, microgram/sample levels. Each standard was prepared from 150 mg tenax and 1.0 ml methanol and contained appropriate amounts of EPA method 624 analytes.Response factors for each analyte reflect the recovery from the tenax using methanol. Quantitation of the analytes found in each sample is based on an average fit of the response factors for the three standards referred to above, using a characteristic ion of each analyte.

UBTL will maintain a complete record of your data on magnetic tape including the ion chromatograms, mass spectra, and verification of compliance with EPA tuning(BFB).

The results are reported twice for each sample in the body of the report, first on the Summary Report and again on the Analytical Report (results by sample). The Analytical Report consists of two pages for each sample. Analytical standards have been analyzed for each compound on page one and the quantitative results are presented. The unknown compounds have been tentatively identified and are found on page two of the Analytical Report. The amount of each unknown present is estimated by comparison to an internal standard. Additionally, the footnotes on page two of the Analytical Report have been used to qualify the data reported.

Lawrence S. Hall

ANALYTICAL REPORT FOR SAMPLE No. CH-15497

TARGET ANALYTE RESULTS

Field Sample ID L1A-1 Sponsor ATT
File ID BD14CH1549 Date of Analysis 09/29/87 Date Received 09/04/87

DataChem SET ID 87-2628

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.0
29584-5	bromomethane	U	1.0
9003-22-9	vinyl chloride	U	1.0
29480-2	chloroethane	U	1.0
75-09-2	dichloromethane	0.2 J	1.0
75-69-4	trichlorofluoromethane	U	1.0
75-34-3	1,1-dichloroethane	U	1.0
75-35-4	1,1-dichloroethene	U	1.0
107-06-2	trans-1,2-dichloroethene	U	1.0
76-66-3	chloroform	U	1.0
107-06-2	1,2-dichloroethane	U	1.0
71-55-6	1,1,1-trichloroethane	U	1.0
56-23-5	carbon tetrachloride	U	1.0
75-27-4	bromodichloromethane	U	1.0
78-87-5	1,2-dichloropropane	U	1.0
542-75-6	trans-1,3-dichloropropene	U	1.0
79-01-6	trichloroethene	U	1.0
71-43-2	benzene	U	1.0
124-48-1	chlorodibromomethane	U	1.0
79-00-5	1,1,2-trichloroethane	U	1.0
542-75-6	cis-1,3-dichloropropene	U	1.0
110-75-8	2-chloroethylvinyl ether	U	1.0
75-25-2	bromoform	U	1.0
79-34-5	1,1,2,2-tetrachloroethane	U	1.0
127-18-4	tetrachloroethene	0.1 J	1.0
108-88-3	toluene	0.7 J	1.0
108-90-7	chlorobenzene	U	1.0
100-41-4	ethylbenzene	0.2 J	1.0
541-73-1	1,3-dichlorobenzene	U	1.0
	1,2 & 1,4-dichlorobenzenes	U	1.0

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-15497

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID L1A-1

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
	xylenes	565& 551	1.Ø	K

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-15498

TARGET ANALYTE RESULTS

Field Sample ID L2A-1 Sponsor ATT
File ID BD29CH1549 Date of Analysis 09/30/87 Date Received 09/04/87

DataChem SET ID 87-2628

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.0
29584-5	bromomethane	U	1.0
9003-22-9	vinyl chloride	U	1.0
29480-2	chloroethane	U	1.0
75-09-2	dichloromethane	0.3 J	1.0
75-69-4	trichlorofluoromethane	U	1.0
75-34-3	1,1-dichloroethane	U	1.0
75-35-4	1,1-dichloroethene	U	1.0
107-06-2	trans-1,2-dichloroethene	U	1.0
76-66-3	chloroform	U	1.0
107-06-2	1,2-dichloroethane	U	1.0
71-55-6	1,1,1-trichloroethane	U	1.0
56-23-5	carbon tetrachloride	U	1.0
75-27-4	bromodichloromethane	U	1.0
78-87-5	1,2-dichloropropane	U	1.0
542-75-6	trans-1,3-dichloropropene	U	1.0
79-01-6	trichloroethene	U	1.0
71-43-2	benzene	U	1.0
124-48-1	chlorodibromomethane	U	1.0
79-00-5	1,1,2-trichloroethane	U	1.0
542-75-6	cis-1,3-dichloropropene	U	1.0
110-75-8	2-chloroethylvinyl ether	U	1.0
75-25-2	bromoform	U	1.0
79-34-5	1,1,2,2-tetrachloroethane	U	1.0
127-18-4	tetrachloroethene	0.2 J	1.0
108-88-3	toluene	1.1	1.0
108-90-7	chlorobenzene	U	1.0
100-41-4	ethylbenzene	0.3 J	1.0
541-73-1	1,3-dichlorobenzene	U	1.0
	1,2 & 1,4-dichlorobenzenes	U	1.0

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-15498

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID L2A-1

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
	xylenes	567& 552	1.6	K

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-1550Ø1

TARGET ANALYTE RESULTS

Field Sample ID 2A-1 Sponsor ATT
File ID BD18CH155Ø Date of Analysis Ø9/3Ø/87 Date Received Ø9/Ø4/87

DataChem SET ID 87-2628

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.Ø
29584-5	bromomethane	U	1.Ø
9ØØ3-22-9	vinyl chloride	U	1.Ø
2948Ø-2	chloroethane	U	1.Ø
75-Ø9-2	dichloromethane	Ø.2 J	1.Ø
75-69-4	trichlorofluoromethane	U	1.Ø
75-34-3	1,1-dichloroethane	U	1.Ø
75-35-4	1,1-dichloroethene	U	1.Ø
1Ø7-Ø6-2	trans-1,2-dichloroethene	U	1.Ø
76-66-3	chloroform	U	1.Ø
1Ø7-Ø6-2	1,2-dichloroethane	U	1.Ø
71-55-6	1,1,1-trichloroethane	U	1.Ø
56-23-5	carbon tetrachloride	U	1.Ø
75-27-4	bromodichloromethane	U	1.Ø
78-87-5	1,2-dichloropropane	U	1.Ø
542-75-6	trans-1,3-dichloropropene	U	1.Ø
79-Ø1-6	trichloroethene	U	1.Ø
71-43-2	benzene	U	1.Ø
124-48-1	chlorodibromomethane	U	1.Ø
79-ØØ-5	1,1,2-trichloroethane	U	1.Ø
542-75-6	cis-1,3-dichloropropene	U	1.Ø
11Ø-75-8	2-chloroethylvinyl ether	U	1.Ø
75-25-2	bromoform	U	1.Ø
79-34-5	1,1,2,2-tetrachloroethane	U	1.Ø
127-18-4	tetrachloroethene	Ø.3 J	1.Ø
1Ø8-88-3	toluene	Ø.5 J	1.Ø
1Ø8-9Ø-7	chlorobenzene	U	1.Ø
1ØØ-41-4	ethylbenzene	Ø.2 J	1.Ø
541-73-1	1,3-dichlorobenzene	U	1.Ø
	1,2 & 1,4-dichlorobenzenes	U	1.Ø

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-1550l

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID 2A-1

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
78-93-3	2-butanone	214	Ø.3	B
	xylenes	565& 551	Ø.8	K

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-16398

TARGET ANALYTE RESULTS

Field Sample ID 12A-3 Sponsor ATT
File ID BD30CH1639 Date of Analysis 09/30/87 Date Received 09/22/87

DataChem SET ID 87-2764

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.0
29584-5	bromomethane	U	1.0
9003-22-9	vinyl chloride	U	1.0
29480-2	chloroethane	U	1.0
75-09-2	dichloromethane	0.2 J	1.0
75-69-4	trichlorofluoromethane	U	1.0
75-34-3	1,1-dichloroethane	U	1.0
75-35-4	1,1-dichloroethene	U	1.0
107-06-2	trans-1,2-dichloroethene	U	1.0
76-66-3	chloroform	U	1.0
107-06-2	1,2-dichloroethane	U	1.0
71-55-6	1,1,1-trichloroethane	U	1.0
56-23-5	carbon tetrachloride	U	1.0
75-27-4	bromodichloromethane	U	1.0
78-87-5	1,2-dichloropropane	U	1.0
542-75-6	trans-1,3-dichloropropene	U	1.0
79-01-6	trichloroethene	U	1.0
71-43-2	benzene	U	1.0
124-48-1	chlorodibromomethane	U	1.0
79-00-5	1,1,2-trichloroethane	U	1.0
542-75-6	cis-1,3-dichloropropene	U	1.0
110-75-8	2-chloroethylvinyl ether	U	1.0
75-25-2	bromoform	U	1.0
79-34-5	1,1,2,2-tetrachloroethane	U	1.0
127-18-4	tetrachloroethene	0.1 J	1.0
108-88-3	toluene	0.4 J	1.0
108-90-7	chlorobenzene	U	1.0
100-41-4	ethylbenzene	0.1 J	1.0
541-73-1	1,3-dichlorobenzene	U	1.0
	1,2 & 1,4-dichlorobenzenes	U	1.0

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-16398

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID 12A-3

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
	xylenes	568& 553	Ø.7	K

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-16400

TARGET ANALYTE RESULTS

Field Sample ID 1A-3 Sponsor ATT
File ID BD21CH1640 Date of Analysis 09/30/87 Date Received 09/22/87

DataChem SET ID 87-2764

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.0
29584-5	bromomethane	U	1.0
9003-22-9	vinyl chloride	U	1.0
29480-2	chloroethane	U	1.0
75-09-2	dichloromethane	0.3 J	1.0
75-69-4	trichlorofluoromethane	0.1 J	1.0
75-34-3	1,1-dichloroethane	U	1.0
75-35-4	1,1-dichloroethene	U	1.0
107-06-2	trans-1,2-dichloroethene	U	1.0
76-66-3	chloroform	U	1.0
107-06-2	1,2-dichloroethane	U	1.0
71-55-6	1,1,1-trichloroethane	U	1.0
56-23-5	carbon tetrachloride	U	1.0
75-27-4	bromodichloromethane	U	1.0
78-87-5	1,2-dichloropropane	U	1.0
542-75-6	trans-1,3-dichloropropene	U	1.0
79-01-6	trichloroethene	U	1.0
71-43-2	benzene	U	1.0
124-48-1	chlorodibromomethane	U	1.0
79-00-5	1,1,2-trichloroethane	U	1.0
542-75-6	cis-1,3-dichloropropene	U	1.0
110-75-8	2-chloroethylvinyl ether	U	1.0
75-25-2	bromoform	U	1.0
79-34-5	1,1,2,2-tetrachloroethane	U	1.0
127-18-4	tetrachloroethene	0.1 J	1.0
108-88-3	toluene	0.4 J	1.0
108-90-7	chlorobenzene	U	1.0
100-41-4	ethylbenzene	0.1 J	1.0
541-73-1	1,3-dichlorobenzene	U	1.0
	1,2 & 1,4-dichlorobenzenes	U	1.0

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-16400

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID 1A-3

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
	xylenes	564& 551	Ø.7	K

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-16401

TARGET ANALYTE RESULTS

Field Sample ID 2A-3 Sponsor ATT
File ID BD22CH1640 Date of Analysis 09/30/87 Date Received 09/22/87

DataChem SET ID 87-2764

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.0
29584-5	bromomethane	U	1.0
9003-22-9	vinyl chloride	U	1.0
29480-2	chloroethane	U	1.0
75-09-2	dichloromethane	U	1.0
75-69-4	trichlorofluoromethane	U	1.0
75-34-3	1,1-dichloroethane	U	1.0
75-35-4	1,1-dichloroethene	U	1.0
107-06-2	trans-1,2-dichloroethene	U	1.0
76-66-3	chloroform	U	1.0
107-06-2	1,2-dichloroethane	U	1.0
71-55-6	1,1,1-trichloroethane	U	1.0
56-23-5	carbon tetrachloride	U	1.0
75-27-4	bromodichloromethane	U	1.0
78-87-5	1,2-dichloropropane	U	1.0
542-75-6	trans-1,3-dichloropropene	U	1.0
79-01-6	trichloroethene	U	1.0
71-43-2	benzene	U	1.0
124-48-1	chlorodibromomethane	U	1.0
79-00-5	1,1,2-trichloroethane	U	1.0
542-75-6	cis-1,3-dichloropropene	U	1.0
110-75-8	2-chloroethylvinyl ether	U	1.0
75-25-2	bromoform	U	1.0
79-34-5	1,1,2,2-tetrachloroethane	U	1.0
127-18-4	tetrachloroethene	0.2 J	1.0
108-88-3	toluene	0.4 J	1.0
108-90-7	chlorobenzene	U	1.0
100-41-4	ethylbenzene	0.2 J	1.0
541-73-1	1,3-dichlorobenzene	U	1.0
	1,2 & 1,4-dichlorobenzenes	U	1.0

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-16401

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID 2A-3

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
	xylenes	565& 549	Ø.8	K

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-16402

TARGET ANALYTE RESULTS

Field Sample ID CA-3 Sponsor ATT
File ID BD23CH1640 Date of Analysis 09/30/87 Date Received 09/22/87

DataChem SET ID 87-2764

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.0
29584-5	bromomethane	U	1.0
9003-22-9	vinyl chloride	U	1.0
29480-2	chloroethane	U	1.0
75-09-2	dichloromethane	0.2 J	1.0
75-69-4	trichlorofluoromethane	U	1.0
75-34-3	1,1-dichloroethane	U	1.0
75-35-4	1,1-dichloroethene	U	1.0
107-06-2	trans-1,2-dichloroethene	U	1.0
76-66-3	chloroform	U	1.0
107-06-2	1,2-dichloroethane	U	1.0
71-55-6	1,1,1-trichloroethane	U	1.0
56-23-5	carbon tetrachloride	U	1.0
75-27-4	bromodichloromethane	U	1.0
78-87-5	1,2-dichloropropane	U	1.0
542-75-6	trans-1,3-dichloropropene	U	1.0
79-01-6	trichloroethene	U	1.0
71-43-2	benzene	U	1.0
124-48-1	chlorodibromomethane	U	1.0
79-00-5	1,1,2-trichloroethane	U	1.0
542-75-6	cis-1,3-dichloropropene	U	1.0
110-75-8	2-chloroethylvinyl ether	U	1.0
75-25-2	bromoform	U	1.0
79-34-5	1,1,2,2-tetrachloroethane	U	1.0
127-18-4	tetrachloroethene	0.1 J	1.0
108-88-3	toluene	0.7 J	1.0
108-90-7	chlorobenzene	U	1.0
100-41-4	ethylbenzene	0.2 J	1.0
541-73-1	1,3-dichlorobenzene	U	1.0
	1,2 & 1,4-dichlorobenzenes	U	1.0

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-16402

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID CA-3

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
	xylenes	565& 550	1.1	K

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-16403

TARGET ANALYTE RESULTS

Field Sample ID BLANK A Sponsor ATT
File ID BD24CH1640 Date of Analysis 09/30/87 Date Received 09/22/87

DataChem SET ID 87-2764

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.0
29584-5	bromomethane	U	1.0
9003-22-9	vinyl chloride	U	1.0
29480-2	chloroethane	U	1.0
75-09-2	dichloromethane	0.3 J	1.0
75-69-4	trichlorofluoromethane	0.1 J	1.0
75-34-3	1,1-dichloroethane	U	1.0
75-35-4	1,1-dichloroethene	U	1.0
107-06-2	trans-1,2-dichloroethene	U	1.0
76-66-3	chloroform	U	1.0
107-06-2	1,2-dichloroethane	U	1.0
71-55-6	1,1,1-trichloroethane	U	1.0
56-23-5	carbon tetrachloride	U	1.0
75-27-4	bromodichloromethane	U	1.0
78-87-5	1,2-dichloropropane	U	1.0
542-75-6	trans-1,3-dichloropropene	U	1.0
79-01-6	trichloroethene	U	1.0
71-43-2	benzene	U	1.0
124-48-1	chlorodibromomethane	U	1.0
79-00-5	1,1,2-trichloroethane	U	1.0
542-75-6	cis-1,3-dichloropropene	U	1.0
110-75-8	2-chloroethylvinyl ether	U	1.0
75-25-2	bromoform	U	1.0
79-34-5	1,1,2,2-tetrachloroethane	U	1.0
127-18-4	tetrachloroethene	U	1.0
108-88-3	toluene	U	1.0
108-90-7	chlorobenzene	U	1.0
100-41-4	ethylbenzene	U	1.0
541-73-1	1,3-dichlorobenzene	U	1.0
	1,2 & 1,4-dichlorobenzenes	U	1.0

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-16403

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID BLANK A

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	none detected	----	-----	----

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.

E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.

J Indicates an estimated concentration below the Method Detection Limit.

K The isomer is unknown.

N Analytical standards were not analyzed for this compound.

U Not detected.

W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-15723

TARGET ANALYTE RESULTS

Field Sample ID 12A-1 Sponsor ATT
File ID FB07CH1572 Date of Analysis 09/17/87 Date Received 09/16/87

DataChem SET ID 87-2682

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.0
29584-5	bromomethane	U	1.0
9003-22-9	vinyl chloride	U	1.0
29480-2	chloroethane	U	1.0
75-09-2	dichloromethane	U	1.0
75-69-4	trichlorofluoromethane	U	1.0
75-34-3	1,1-dichloroethane	U	1.0
75-35-4	1,1-dichloroethene	U	1.0
107-06-2	trans-1,2-dichloroethene	U	1.0
76-66-3	chloroform	U	1.0
107-06-2	1,2-dichloroethane	U	1.0
71-55-6	1,1,1-trichloroethane	U	1.0
56-23-5	carbon tetrachloride	U	1.0
75-27-4	bromodichloromethane	U	1.0
78-87-5	1,2-dichloropropane	U	1.0
542-75-6	trans-1,3-dichloropropene	U	1.0
79-01-6	trichloroethene	U	1.0
71-43-2	benzene	U	1.0
124-48-1	chlorodibromomethane	U	1.0
79-00-5	1,1,2-trichloroethane	U	1.0
542-75-6	cis-1,3-dichloropropene	U	1.0
110-75-8	2-chloroethylvinyl ether	U	1.0
75-25-2	bromoform	U	1.0
79-34-5	1,1,2,2-tetrachloroethane	U	1.0
127-18-4	tetrachloroethene	U	1.0
108-88-3	toluene	.2 J	1.0
108-90-7	chlorobenzene	U	1.0
100-41-4	ethylbenzene	U	1.0
541-73-1	1,3-dichlorobenzene	U	1.0
	1,2 & 1,4-dichlorobenzenes	U	1.0

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-15723

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID 12A-1

Cas. No	COMPOUND	Scan Number	Results ug	Footnotes
----------	-no additional volatiles reported--	----	-----	----

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.

E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.

J Indicates an estimated concentration below the Method Detection Limit.

K The isomer is unknown.

N Analytical standards were not analyzed for this compound.

U Not detected.

W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-15724

TARGET ANALYTE RESULTS

Field Sample ID 11A-1 Sponsor ATT
File ID FBØ8CH1572 Date of Analysis Ø9/17/87 Date Received Ø9/16/87

DataChem SET ID 87-2682

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.Ø
29584-5	bromomethane	U	1.Ø
9ØØ3-22-9	vinyl chloride	U	1.Ø
29480-2	chloroethane	U	1.Ø
75-Ø9-2	dichloromethane	U	1.Ø
75-69-4	trichlorofluoromethane	U	1.Ø
75-34-3	1,1-dichloroethane	U	1.Ø
75-35-4	1,1-dichloroethene	U	1.Ø
1Ø7-Ø6-2	trans-1,2-dichloroethene	U	1.Ø
76-66-3	chloroform	U	1.Ø
1Ø7-Ø6-2	1,2-dichloroethane	U	1.Ø
71-55-6	1,1,1-trichloroethane	U	1.Ø
56-23-5	carbon tetrachloride	U	1.Ø
75-27-4	bromodichloromethane	U	1.Ø
78-87-5	1,2-dichloropropane	U	1.Ø
542-75-6	trans-1,3-dichloropropene	U	1.Ø
79-Ø1-6	trichloroethene	U	1.Ø
71-43-2	benzene	U	1.Ø
124-48-1	chlorodibromomethane	U	1.Ø
79-ØØ-5	1,1,2-trichloroethane	U	1.Ø
542-75-6	cis-1,3-dichloropropene	U	1.Ø
11Ø-75-8	2-chloroethylvinyl ether	U	1.Ø
75-25-2	bromoform	U	1.Ø
79-34-5	1,1,2,2-tetrachloroethane	U	1.Ø
127-18-4	tetrachloroethene	U	1.Ø
1Ø8-88-3	toluene	.3 J	1.Ø
1Ø8-9Ø-7	chlorobenzene	U	1.Ø
1ØØ-41-4	ethylbenzene	U	1.Ø
541-73-1	1,3-dichlorobenzene	U	1.Ø
	1,2 & 1,4-dichlorobenzenes	U	1.Ø

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-15724

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID 11A-1

Cas. No	COMPOUND	Scan Number	Results ug	Footnotes
	xylenes	624& 646	.5	J,K

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-15727

TARGET ANALYTE RESULTS

Field Sample ID 11A-2 Sponsor ATT
File ID FB11CH1572 Date of Analysis 09/17/87 Date Received 09/16/87

DataChem SET ID 87-2682

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.0
29584-5	bromomethane	U	1.0
9003-22-9	vinyl chloride	U	1.0
29480-2	chloroethane	U	1.0
75-09-2	dichloromethane	U	1.0
75-69-4	trichlorofluoromethane	U	1.0
75-34-3	1,1-dichloroethane	U	1.0
75-35-4	1,1-dichloroethene	U	1.0
107-06-2	trans-1,2-dichloroethene	U	1.0
76-66-3	chloroform	U	1.0
107-06-2	1,2-dichloroethane	U	1.0
71-55-6	1,1,1-trichloroethane	U	1.0
56-23-5	carbon tetrachloride	U	1.0
75-27-4	bromodichloromethane	U	1.0
78-87-5	1,2-dichloropropane	U	1.0
542-75-6	trans-1,3-dichloropropene	U	1.0
79-01-6	trichloroethene	U	1.0
71-43-2	benzene	U	1.0
124-48-1	chlorodibromomethane	U	1.0
79-00-5	1,1,2-trichloroethane	U	1.0
542-75-6	cis-1,3-dichloropropene	U	1.0
110-75-8	2-chloroethylvinyl ether	U	1.0
75-25-2	bromoform	U	1.0
79-34-5	1,1,2,2-tetrachloroethane	U	1.0
127-18-4	tetrachloroethene	U	1.0
108-88-3	toluene	.3 J	1.0
108-90-7	chlorobenzene	U	1.0
100-41-4	ethylbenzene	U	1.0
541-73-1	1,3-dichlorobenzene	U	1.0
	1,2 & 1,4-dichlorobenzenes	U	1.0

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-15727

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID 11A-2

Cas. No	COMPOUND	Scan Number	Results ug	Footnotes
	xylenes	622& 643	.6	J,K

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-15731

TARGET ANALYTE RESULTS

Field Sample ID CA-2 Sponsor ATT
File ID FB15CH1573 Date of Analysis 09/17/87 Date Received 09/16/87

DataChem SET ID 87-2682

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.0
29584-5	bromomethane	U	1.0
9003-22-9	vinyl chloride	U	1.0
29480-2	chloroethane	U	1.0
75-09-2	dichloromethane	U	1.0
75-69-4	trichlorofluoromethane	U	1.0
75-34-3	1,1-dichloroethane	U	1.0
75-35-4	1,1-dichloroethene	U	1.0
107-06-2	trans-1,2-dichloroethene	U	1.0
76-66-3	chloroform	U	1.0
107-06-2	1,2-dichloroethane	U	1.0
71-55-6	1,1,1-trichloroethane	U	1.0
56-23-5	carbon tetrachloride	U	1.0
75-27-4	bromodichloromethane	U	1.0
78-87-5	1,2-dichloropropane	U	1.0
542-75-6	trans-1,3-dichloropropene	U	1.0
79-01-6	trichloroethene	U	1.0
71-43-2	benzene	U	1.0
124-48-1	chlorodibromomethane	U	1.0
79-00-5	1,1,2-trichloroethane	U	1.0
542-75-6	cis-1,3-dichloropropene	U	1.0
110-75-8	2-chloroethylvinyl ether	U	1.0
75-25-2	bromoform	U	1.0
79-34-5	1,1,2,2-tetrachloroethane	U	1.0
127-18-4	tetrachloroethene	U	1.0
108-88-3	toluene	.6 J	1.0
108-90-7	chlorobenzene	U	1.0
100-41-4	ethylbenzene	.2 J	1.0
541-73-1	1,3-dichlorobenzene	U	1.0
	1,2 & 1,4-dichlorobenzenes	U	1.0

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-15731

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID CA-2

Cas. No	COMPOUND	Scan Number	Results ug	Footnotes
	xylenes	620& 643	1.3	K

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-15734

TARGET ANALYTE RESULTS

Field Sample ID L1A-2 Sponsor ATT
File ID FB18CH1573 Date of Analysis 09/17/87 Date Received 09/16/87

DataChem SET ID 87-2682

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.0
29584-5	bromomethane	U	1.0
9003-22-9	vinyl chloride	U	1.0
29480-2	chloroethane	U	1.0
75-09-2	dichloromethane	U	1.0
75-69-4	trichlorofluoromethane	U	1.0
75-34-3	1,1-dichloroethane	U	1.0
75-35-4	1,1-dichloroethene	U	1.0
107-06-2	trans-1,2-dichloroethene	U	1.0
76-66-3	chloroform	U	1.0
107-06-2	1,2-dichloroethane	U	1.0
71-55-6	1,1,1-trichloroethane	U	1.0
56-23-5	carbon tetrachloride	U	1.0
75-27-4	bromodichloromethane	U	1.0
78-87-5	1,2-dichloropropane	U	1.0
542-75-6	trans-1,3-dichloropropene	U	1.0
79-01-6	trichloroethene	U	1.0
71-43-2	benzene	U	1.0
124-48-1	chlorodibromomethane	U	1.0
79-00-5	1,1,2-trichloroethane	U	1.0
542-75-6	cis-1,3-dichloropropene	U	1.0
110-75-8	2-chloroethylvinyl ether	U	1.0
75-25-2	bromoform	U	1.0
79-34-5	1,1,2,2-tetrachloroethane	U	1.0
127-18-4	tetrachloroethene	.8 J	1.0
108-88-3	toluene	.5 J	1.0
108-90-7	chlorobenzene	U	1.0
100-41-4	ethylbenzene	.3 J	1.0
541-73-1	1,3-dichlorobenzene	U	1.0
	1,2 & 1,4-dichlorobenzenes	U	1.0

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-15734

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID L1A-2

Cas. No	COMPOUND	Scan Number	Results ug	Footnotes
	xylenes	620& 642	1.5	K

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH-15735

TARGET ANALYTE RESULTS

Field Sample ID L2A-2 Sponsor ATT
File ID FB19CH1573 Date of Analysis 09/17/87 Date Received 09/16/87

DataChem SET ID 87-2682

Cas. No	COMPOUND	RESULTS (ug/sample)	DETECTION LIMITS (ug/sample)
29479-9	chloromethane	U	1.0
29584-5	bromomethane	U	1.0
9003-22-9	vinyl chloride	U	1.0
29480-2	chloroethane	U	1.0
75-09-2	dichloromethane	U	1.0
75-69-4	trichlorofluoromethane	U	1.0
75-34-3	1,1-dichloroethane	U	1.0
75-35-4	1,1-dichloroethene	U	1.0
107-06-2	trans-1,2-dichloroethene	U	1.0
76-66-3	chloroform	U	1.0
107-06-2	1,2-dichloroethane	U	1.0
71-55-6	1,1,1-trichloroethane	U	1.0
56-23-5	carbon tetrachloride	U	1.0
75-27-4	bromodichloromethane	U	1.0
78-87-5	1,2-dichloropropane	U	1.0
542-75-6	trans-1,3-dichloropropene	U	1.0
79-01-6	trichloroethene	U	1.0
71-43-2	benzene	U	1.0
124-48-1	chlorodibromomethane	U	1.0
79-00-5	1,1,2-trichloroethane	U	1.0
542-75-6	cis-1,3-dichloropropene	U	1.0
110-75-8	2-chloroethylvinyl ether	U	1.0
75-25-2	bromoform	U	1.0
79-34-5	1,1,2,2-tetrachloroethane	U	1.0
127-18-4	tetrachloroethene	.3 J	1.0
108-88-3	toluene	.5 J	1.0
108-90-7	chlorobenzene	U	1.0
100-41-4	ethylbenzene	.3 J	1.0
541-73-1	1,3-dichlorobenzene	U	1.0
	1,2 & 1,4-dichlorobenzenes	U	1.0

See Footnotes on Page 2

ANALYTICAL REPORT FOR SAMPLE No. CH-15735

NON-TARGET ANALYTE RESULTS
Additional Volatiles

Field Sample ID L2A-2

Cas. No	COMPOUND	Scan Number	Results ug	Footnotes
	xylenes	620& 642	1.3	K

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

Methodology and Laboratory Data: Semivolatile Organic Compounds

October 5, 1987

REPORT INTRODUCTION
ANALYTICAL COMMENTARY

SUBMITTED TO: Tom Mohr

SUBMITTED BY: Diane Baker

REFERENCE DATA:

Analysis of: 20 XAD tubes for organics

Method of Analysis: gas chromatography/ mass spectrometry

Identification No: 87-2683 and 87-2763

DataChem Laboratory No: CH15736 through CH15752 and
CH16395 through CH16397

The above numbered samples were analyzed for base-neutral and acid compounds by gas chromatography / mass spectrometry using a Finnigan 5100 GC/MS system.

The samples were prepared for analysis by extracting the contents of each XAD tube in one milliliter of methylene chloride. Recovery standards were prepared in the same manner by addition of one milliliter of the standard concentration (in methylene chloride) to blank XAD. Method blanks were also prepared for each sample set by addition of one milliliter of methylene chloride to blank XAD. Each sample, standard and the method blanks were allowed to equilibrate a minimum of one hour before analysis. Internal standards were added to each sample, standard and method blank prior to analysis.

Separation of the compounds of interest was obtained with a 30 m, 0.32 mm internal diameter, DB-5 fused silica capillary column. Oven temperature was programmed from 40 degrees centigrade (held isothermal for 4 minutes) to 300 degrees centigrade at 10 degrees centigrade per minute. A 40 second splitless injection interval was used, scanning a mass range of 35 to 500 amu each second.

The recovery standards were analyzed at 120, 60, 15, 7.5, and 3.75 microgram per sample levels. Quantitation of the analytes found in each sample is based on an average fit of the response factors for the five recovery standards using a characteristic ion of each analyte. Response factors for each analyte reflect the recovery from the XAD using methylene chloride as the solvent. The internal standard method of quantitation was used.

DataChem will maintain a complete record of this data on magnetic tape along with hard copies of the ion chromatograms, mass spectra, surrogate recovery summary, and verification of compliance with EPA tuning (DFTPP) and chromatography criteria.

Peaks not listed in the quantitative report with signal intensities greater than ten percent of the nearest internal standard were searched against the NBS spectral library to obtain a tentative identification. For samples containing a large number of such compounds, ten of the most significant peaks in each fraction were selected for identification.

The results are reported twice for each sample in the following report, first on the Summary Report and again on the Analytical Report (results by sample). The Analytical Report consists of three pages for each sample. Analytical standards have been analyzed for each compound on page one and two and the quantitative results are presented. The unknown compounds which have been tentatively identified are found on page three of the Analytical Report. The amount of each unknown present is estimated by comparison to an internal standard.

Please note that the results have been reported as micrograms per sample. The footnotes on page three of the Analytical Report have been used to qualify the data reported.

Richard Wade for
Diane E. Baker

ANALYTICAL REPORT FOR SAMPLE No. CH 15738

TARGET ANALYTE RESULTS

Field Sample ID L1B-2 Sponsor ATT

File ID QZCH15738 Date Extracted 09/22/87 Date of Analysis 09/22/87

DATACHEM SET ID 87-2683

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

ANALYTICAL REPORT FOR SAMPLE No. CH 15736

TARGET ANALYTE RESULTS

Field Sample ID L1B-2

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15738

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

L18-2
Field Sample ID 4B-2

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	DIETHYL BENZENE ISOMER	644	4.6	EKN
----------	" " "	654	8.Ø	EKN
----------	UNKNOWN PHTHALATE	741	2.2	E
----------	TRIETHYL BENZENE	861	1.1	EKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH15739

TARGET ANALYTE RESULTS

Field Sample ID L2B-2 Sponsor ATT

File ID QZCH15739 Date Extracted 09/22/87 Date of Analysis 09/22/87

DATACHEM SET ID 87-2683

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

TARGET ANALYTE RESULTS

Field Sample ID L2B-2

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15739

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID L2B-2

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	DIETHYL BENZENE ISOMER	691	3.9	EKN
----------	" " "	698	6.7	EKN
----------	UNKNOWN PHTHALATE	772	2.Ø	E
----------	TRIETHYL BENZENE	875	Ø.8	EKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH15740

TARGET ANALYTE RESULTS

Field Sample ID 1B-2 Sponsor ATT

File ID QZCH15740 Date Extracted 09/22/87 Date of Analysis 09/22/87

DATACHEM SET ID 87-2663

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

ANALYTICAL REPORT FOR SAMPLE No. CH15740

TARGET ANALYTE RESULTS

Field Sample ID 1B-2

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15740

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID 1B-2

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	DIETHYL BENZENE ISOMER	689	4.5	EKN
----------	" " "	696	8.0	EKN
----------	UNKNOWN PHTHALATE	770	2.3	E
----------	TRIETHYL BENZENE	874	1.0	EKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.

E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.

J Indicates an estimated concentration below the Method Detection Limit.

K The isomer is unknown.

N Analytical standards were not analyzed for this compound.

U Not detected.

W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH15741

TARGET ANALYTE RESULTS

Field Sample ID CB-1 Sponsor ATT

File ID QZCH15741 Date Extracted 09/22/87 Date of Analysis 09/22/87

DATACHEM SET ID 87-2683

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

TARGET ANALYTE RESULTS

Field Sample ID CB-1

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15741

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID CB-1

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	DIETHYL BENZENE ISOMER	689	4.Ø	EKN
----------	" " "	696	8.Ø	EKN
----------	UNKNOWN PHTHALATE	77Ø	2.Ø	E
----------	TRIETHYL BENZENE	874	Ø.8	EKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.

E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.

J Indicates an estimated concentration below the Method Detection Limit.

K The isomer is unknown.

N Analytical standards were not analyzed for this compound.

U Not detected.

W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH15742

TARGET ANALYTE RESULTS

Field Sample ID 12B-1 Sponsor ATT

File ID QZCH15742 Date Extracted 09/22/87 Date of Analysis 09/22/87

DATACHEM SET ID 87-2683

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)	
62-75-9	N-nitrosodimethylamine	U	5	*
108-95-2	phenol	U	1.5	
111-44-4	bis(2-chloroethyl)ether	U	5.7	
95-57-8	2-chlorophenol	U	3.3	
541-73-1	1,3-dichlorobenzene	U	1.9	
106-46-7	1,4-dichlorobenzene	U	4.4	
95-50-1	1,2-dichlorobenzene	U	1.9	
39638-329	bis(2-chloroisopropyl)ether	U	5.7	
621-64-7	N-nitrosodi-n-propylamine	U	3.0	*
67-72-1	hexachloroethane	U	1.6	
98-95-3	nitrobenzene	U	1.9	
78-59-1	isophorone	U	2.2	
88-75-5	2-nitrophenol	U	3.6	
105-67-9	2,4-dimethylphenol	U	2.7	
11-91-1	bis(2-chloroethoxy)methane	U	5.3	
120-83-2	2,4-dichlorophenol	U	2.7	
120-82-1	1,2,4-trichlorobenzene	U	1.9	
91-20-3	naphthalene	U	1.6	
87-68-3	hexachlorobutadiene	U	0.9	
59-50-7	4-chloro-3-methylphenol	U	3.0	
77-47-4	hexachlorocyclopentadiene	U	5.0	*
88-06-2	2,4,6-trichlorophenol	U	2.7	
91-58-7	2-chloronaphthalene	U	1.9	
131-11-3	dimethyl phthalate	U	1.6	
606-20-2	2,6-dinitrotoluene	U	1.9	
208-96-8	acenaphthylene	U	3.5	
83-32-9	acenaphthene	U	1.9	
51-28-5	2,4-dinitrophenol	U	42	
100-02-7	4-nitrophenol	U	2.4	
121-14-2	2,4-dinitrotoluene	U	5.7	
84-66-2	diethyl phthalate	U	1.9	
7005-73-3	4-chlorophenyl-phenylether	U	4.2	
86-73-7	fluorene	U	1.9	
534-52-1	2-methyl-4,6-dinitrophenol	U	24	
86-30-6	N-nitrosodiphenylamine	U	1.9	
101-55-3	4-bromophenyl-phenylether	U	1.9	
118-74-1	hexachlorobenzene	U	1.9	
319-85-7	beta-BHC	U	4.2	

* current DataChem detection limit

ANALYTICAL REPORT FOR SAMPLE No. CH15742

TARGET ANALYTE RESULTS

Field Sample ID 12B-1

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthreno	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15742

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID 12B-1

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	DIETHYL BENZENE ISOMER	689	5.Ø	EKN
----------	" " "	696	9.Ø	EKN
----------	UNKNOWN PHTHALATE	77Ø	2.4	E
----------	TRIETHYL BENZENE ISOMER	874	1.1	EKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH15743

TARGET ANALYTE RESULTS

Field Sample ID 11B-1 Sponsor ATT

File ID QZCH15743 Date Extracted 09/22/87 Date of Analysis 09/23/87

DATACHEM SET ID 87-2683

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

ANALYTICAL REPORT FOR SAMPLE No. CH15743

TARGET ANALYTE RESULTS

Field Sample ID 11B-1

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15743

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID 11B-1

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	DIETHYL BENZENE ISOMER	692	3.2	EKN
----------	" " "	700	6.0	EKN
----------	UNKNOWN PHTHALATE	772	1.6	E
----------	TRIETHYL BENZENE ISOMER	873	0.6	EKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.

E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.

J Indicates an estimated concentration below the Method Detection Limit.

K The isomer is unknown.

N Analytical standards were not analyzed for this compound.

U Not detected.

W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH15747

TARGET ANALYTE RESULTS

Field Sample ID 12B-2 Sponsor ATT

File ID RBCH15747 Date Extracted 09/22/87 Date of Analysis 09/24/87

DATACHEM SET ID 87-2683

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

TARGET ANALYTE RESULTS

Field Sample ID 12B-2

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15747

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID 12B-2

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	DIETHYL BENZENE ISOMER	689	3.4	EKN
----------	" " "	696	6.2	EKN
----------	UNKNOWN PHTHALATE	770	1.6	E

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.

E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.

J Indicates an estimated concentration below the Method Detection Limit.

K The isomer is unknown.

N Analytical standards were not analyzed for this compound.

U Not detected.

W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH15746

TARGET ANALYTE RESULTS

Field Sample ID 11B-2 Sponsor ATT

File ID RBCH15748 Date Extracted 09/22/87 Date of Analysis 09/24/87

DATACHEM SET ID 87-2683

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

ANALYTICAL REPORT FOR SAMPLE No. CH15748

TARGET ANALYTE RESULTS

Field Sample ID 11B-2

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15748

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID 11B-2

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	DIETHYL BENZENE ISOMER	674	Ø.6	EKN
----------	" " "	682	1.2	EKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH15752

TARGET ANALYTE RESULTS

Field Sample ID CB-2 Sponsor ATT

File ID RBCH15752 Date Extracted 09/22/87 Date of Analysis 09/24/87

DATACHEM SET ID 87-2683

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

ANALYTICAL REPORT FOR SAMPLE No. CH15752

TARGET ANALYTE RESULTS

Field Sample ID CB-2

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
72-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15752

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID CB-2

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	DIETHYL BENZENE ISOMER	689	1.9	EKN
----------	" " "	696	4.Ø	EKN
----------	UNKNOWN PHTHALATE	77Ø	1.1	E

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.

E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.

J Indicates an estimated concentration below the Method Detection Limit.

K The isomer is unknown.

N Analytical standards were not analyzed for this compound.

U Not detected.

W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH16396

TARGET ANALYTE RESULTS

Field Sample ID 2B-3 Sponsor ATT

File ID RBCH16396 Date Extracted 09/24/87 Date of Analysis 09/24/87

DATACHEM SET ID 87-2763

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

ANALYTICAL REPORT FOR SAMPLE No. CH16396

TARGET ANALYTE RESULTS

Field Sample ID 2B-3

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH16396

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID 2B-3

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	diethyl benzene isomer	645	2.7	BKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH16397

TARGET ANALYTE RESULTS

Field Sample ID BLANK B Sponsor ATT

File ID RBCH16397 Date Extracted 09/24/87 Date of Analysis 09/24/87

DATACHEM SET ID 87-2763

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

ANALYTICAL REPORT FOR SAMPLE No. CH16397

TARGET ANALYTE RESULTS

Field Sample ID BLANK B

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH16397

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID BLANK B

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	diethyl benzene isomer	648	3.5	EKN
----------	" " "	657	7.Ø	EKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH15492

TARGET ANALYTE RESULTS

Field Sample ID L1B-1 Sponsor AQUA TERRA TECHNOLOGIES

File ID RP14CH492 Date Extracted 09/17/87 Date of Analysis 10/26/87

UBTL SET ID 87-2627

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

ANALYTICAL REPORT FOR SAMPLE No. CH15492

TARGET ANALYTE RESULTS

Field Sample ID L1B-1

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15492

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID L1-B1

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	diethyl benzene isomer	746	2.2	EKN
----------	diethyl benzene isomer	754	3.8	EKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH15493

TARGET ANALYTE RESULTS

Field Sample ID L2B-1 Sponsor AQUA TERRA TECHNOLOGIES

File ID RP15CH493 Date Extracted 09/17/87 Date of Analysis 10/26/87

UBTL SET ID 87-2627

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

ANALYTICAL REPORT FOR SAMPLE No. CH15493

TARGET ANALYTE RESULTS

Field Sample ID L2B-1

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15493

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID L2B-1

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	diethyl benzene isomer	747	1.6	EKN
----------	diethyl benzene isomer	754	2.7	EKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.ØØØ relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH15495

TARGET ANALYTE RESULTS

Field Sample ID 1B-1 Sponsor AQUA TERRA TECHNOLOGIES

File ID RP17CH495 Date Extracted 09/17/87 Date of Analysis 10/26/87

UBTL SET ID 87-2627

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

TARGET ANALYTE RESULTS

Field Sample ID 1B-1

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15495

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID 1B-1

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	diethyl benzene isomer	750	1.9	EKN
----------	diethyl benzene isomer	757	3.2	EKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.
E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.
J Indicates an estimated concentration below the Method Detection Limit.
K The isomer is unknown.
N Analytical standards were not analyzed for this compound.
U Not detected.
W The identification is tentative or closely related to the compound.

ANALYTICAL REPORT FOR SAMPLE No. CH15496

TARGET ANALYTE RESULTS

Field Sample ID 2B-1 Sponsor AQUA TERRA TECHNOLOGIES

File ID RP18CH496 Date Extracted 09/17/87 Date of Analysis 10/27/87

UBTL SET ID 87-2627

Cas. No	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
62-75-9	N-nitrosodimethylamine	U	5 *
108-95-2	phenol	U	1.5
111-44-4	bis(2-chloroethyl)ether	U	5.7
95-57-8	2-chlorophenol	U	3.3
541-73-1	1,3-dichlorobenzene	U	1.9
106-46-7	1,4-dichlorobenzene	U	4.4
95-50-1	1,2-dichlorobenzene	U	1.9
39638-329	bis(2-chloroisopropyl)ether	U	5.7
621-64-7	N-nitrosodi-n-propylamine	U	3.0 *
67-72-1	hexachloroethane	U	1.6
98-95-3	nitrobenzene	U	1.9
78-59-1	isophorone	U	2.2
88-75-5	2-nitrophenol	U	3.6
105-67-9	2,4-dimethylphenol	U	2.7
11-91-1	bis(2-chloroethoxy)methane	U	5.3
120-83-2	2,4-dichlorophenol	U	2.7
120-82-1	1,2,4-trichlorobenzene	U	1.9
91-20-3	naphthalene	U	1.6
87-68-3	hexachlorobutadiene	U	0.9
59-50-7	4-chloro-3-methylphenol	U	3.0
77-47-4	hexachlorocyclopentadiene	U	5.0 *
88-06-2	2,4,6-trichlorophenol	U	2.7
91-58-7	2-chloronaphthalene	U	1.9
131-11-3	dimethyl phthalate	U	1.6
606-20-2	2,6-dinitrotoluene	U	1.9
208-96-8	acenaphthylene	U	3.5
83-32-9	acenaphthene	U	1.9
51-28-5	2,4-dinitrophenol	U	42
100-02-7	4-nitrophenol	U	2.4
121-14-2	2,4-dinitrotoluene	U	5.7
84-66-2	diethyl phthalate	U	1.9
7005-73-3	4-chlorophenyl-phenylether	U	4.2
86-73-7	fluorene	U	1.9
534-52-1	2-methyl-4,6-dinitrophenol	U	24
86-30-6	N-nitrosodiphenylamine	U	1.9
101-55-3	4-bromophenyl-phenylether	U	1.9
118-74-1	hexachlorobenzene	U	1.9
319-85-7	beta-BHC	U	4.2

* current DataChem detection limit

ANALYTICAL REPORT FOR SAMPLE No. CH15496

TARGET ANALYTE RESULTS

Field Sample ID 2B-1

Cas. No.	COMPOUND	RESULTS (ug/sample)	METHOD DETECTION LIMITS (MDL) (ug/sample)
87-86-5	pentachlorophenol	U	3.6
85-01-8	phenanthrene	U	5.4
120-12-7	anthracene	U	1.9
319-86-8	delta-BHC	U	3.1
76-44-8	heptachlor	U	1.9
84-74-2	di-n-butyl phthalate	U	2.5
309-00-2	aldrin	U	1.9
1024-57-3	heptachlor epoxide	U	2.2
206-44-0	fluoranthene	U	2.2
129-00-0	pyrene	U	1.9
959-98-8	endosulfan I	U	20
75-55-9	4,4'DDE	U	5.6
92-87-5	benzidine	U	44
60-57-1	dieldrin	U	2.5
72-20-8	endrin	U	20
72-54-8	4,4'DDD	U	2.8
33213-65-9	endosulfan II	U	20
7421-93-4	endrin aldehyde	U	20
85-68-7	benzyl-butylphthalate	U	2.5
50-29-3	4,4'DDT	U	4.7
1031-07-8	endosulfan sulfate	U	5.6
117-81-7	bis(2-ethylhexyl)phthalate	U	2.5
56-55-3	benzo(a)anthracene	U	7.8
218-01-9	chrysene	U	2.5
91-94-1	3,3-dichlorobenzidine	U	16.5
117-84-0	di-n-octylphthalate	U	2.5
205-99-2	benzo(b)fluroanthene	U	4.8
207-08-9	benzo(k)fluoranthene	U	2.5
50-32-8	benzo(a)pyrene	U	2.5
193-39-5	indeno(1,2,3-cd)pyrene	U	3.7
53-70-3	dibenzo(a,h)anthracene	U	2.5
191-24-2	benzo(ghi)perylene	U	4.1
57-74-9	chlordane	U	40
8001-35-2	toxaphene	U	40
12674-11-2	PCB-1016	U	40
11104-28-2	PCB-1221	U	30
11141-16-5	PCB-1232	U	40
53469-21-9	PCB-1242	U	40
12672-29-6	PCB-1248	U	40
11097-69-1	PCB-1254	U	36
11096-82-5	PCB-1260	U	40

See footnotes on page 3

ANALYTICAL REPORT FOR SAMPLE No. CH15496

NON-TARGET ANALYTE RESULTS
Additional Semi-Volatiles

Field Sample ID 2B-1

Cas. No	COMPOUND	Scan Number	Results ug/s	Footnotes
----------	diethyl benzene isomer	746	1.6	EKN
----------	diethyl benzene isomer	753	2.7	EKN

FOOTNOTES

B The analyte was found in the method blank. The reported results have been adjusted for the quantity found in the blank.

E The reported concentration is an estimate only. The response factor was assumed to be 1.000 relative to an internal standard.

J Indicates an estimated concentration below the Method Detection Limit.

K The isomer is unknown.

N Analytical standards were not analyzed for this compound.

U Not detected.

W The identification is tentative or closely related to the compound.

Laboratory Data:
Metals

DataChem

ANALYTICAL REPORT

RECEIVED OCT 0 9 1987

Date October 6, 1987
Agency Identification Number 87-2742
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Tom Mohr

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 22, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis October 02, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Silver µg/filter	Aluminum µg/filter	Arsenic µg/filter	Boron µg/filter	Barium µg/filter	Beryllium µg/filter	Calcium µg/filter	Cadmium µg/filter
CC-1	CH 16228	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
BLANK C	CH 16229	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			2.	10.	5.	10.	1.	1.	5.	1.

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

Keith Holbrook
Analyst: Keith M. Holbrook

Henry F. Lin
Reviewer: Henry F. Lin

A. Brent Torgensen
Laboratory Supervisor: A. Brent Torgensen

UBTL

DataChem was formerly known as UBTL

DataChem

ANALYTICAL REPORT

Form ARF-AL
Page 2 of 4
Part 2 of 4

Date October 6, 1987
Agency Identification Number 87-2742
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2950 Buskik Avenue
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Attention: Tom Mohr

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Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 22, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis October 02, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Cobalt µg/filter	Chromium µg/filter	Copper µg/filter	Iron µg/filter	Lanthanum µg/filter	Magnesium µg/filter	Manganese µg/filter	Molybdenum µg/filter
CC-1	CH 16228	FILTER	ND*	ND*	ND*	ND*	ND*	1.	ND*	ND*
BLANK C	CH 16229	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			1.	1.	1.	1.	5.	1.	1.	1.

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
** Parameter not analyzed(See comment on last page).
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Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 22, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis October 02, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Nickel µg/filter	Lead µg/filter	Antimony µg/filter	Selenium µg/filter	Tin µg/filter	Tellurium µg/filter	Titanium µg/filter	Thallium µg/filter
CC-1	CH 16228	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
BLANK C	CH 16229	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			1.	2.	10.	10.	10.	10.	10.	10.

† See comment on last page. ** Parameter not analyzed(See comment on last page).
ND Parameter not detected. ( ) Parameter between LOD and LOQ.
NR Parameter not requested.

DataChem

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2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Tom Mohr

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Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 22, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis October 02, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Vanadium µg/filter	Yttrium µg/filter	Zinc µg/filter	Zirconium µg/filter				
CC-1	CH 16228	FILTER	ND*	ND*	ND*	ND*				
BLANK C	CH 16229	FILTER	ND*	ND*	ND*	ND*				
* Limit of Detection			1.	1.	1.	10.				

† See comment on last page. ** Parameter not analyzed(See comment on last page).
ND Parameter not detected. ( ) Parameter between LOD and LOQ.
NR Parameter not requested.

DataChem

ANALYTICAL REPORT

Date September 14, 1987
Agency Identification Number 87-2568
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 04, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 10, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Silver ug/Filter	Aluminum ug/Filter	Arsenic ug/Filter	Boron ug/Filter	Barium ug/Filter	Beryllium ug/Filter	Calcium ug/Filter	Cadmium ug/Filter
L1C-1	CH 15185	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
L2C-1	CH 15186	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
4C-1	CH 15187	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
5C-1	CH 15188	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
1C-1	CH 15189	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
2C-1	CH 15190	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			2.	10	5.	10	1.	1.	5.	1.

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

Analyst: John T. Kershisnik

Reviewer: Henry F. Lin

Laboratory Supervisor: A. Brent Torgensen

UBTL

DataChem was formerly known as UBTL

DataChem

ANALYTICAL REPORT

Date September 14, 1987
Agency Identification Number 87-2568
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 04, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 10, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Cobalt ug/Filter	Chromium ug/Filter	Copper ug/Filter	Iron ug/Filter	Lanthanum ug/Filter	Magnesium ug/Filter	Manganese ug/Filter	Molybdenum ug/Filter	
L1C-1	CH 15185	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	
L2C-1	CH 15186	FILTER	ND*	ND*	ND*	2.	ND*	ND*	ND*	ND*	
4C-1	CH 15187	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	
5C-1	CH 15188	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	
1C-1	CH 15189	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	
2C-1	CH 15190	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	
* Limit of Detection			1.	1.	1.	1.	5.	1.	1.	1.	

† See comment on last page.
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NR Parameter not requested.
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DataChem

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Date September 14, 1987
Agency Identification Number 87-2568
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 04, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 10, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Nickel ug/Filter	Lead ug/Filter	Antimony ug/Filter	Selenium ug/Filter	Tin ug/Filter	Tellurium ug/Filter	Titanium ug/Filter	Thallium ug/Filter
L1C-1	CH 15185	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
L2C-1	CH 15186	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
4C-1	CH 15187	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
5C-1	CH 15188	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
1C-1	CH 15189	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
2C-1	CH 15190	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			1.	2.	10	10	10	10	10	10

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
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( ) Parameter between LOD and LOQ.

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ANALYTICAL REPORT

Form ARF-AL
Page 4 of 4
Part 4 of 4

Date September 14, 1987
Agency Identification Number 87-2568
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 04, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 10, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Vanadium ug/Filter	Yttrium ug/Filter	Zinc ug/Filter	Zirconium ug/Filter	Mercury ug/Filter			
L1C-1	CH 15185	FILTER	ND*	ND*	ND*	ND*	ND*			
L2C-1	CH 15186	FILTER	ND*	ND*	ND*	ND*	ND*			
4C-1	CH 15187	FILTER	ND*	ND*	ND*	ND*	ND*			
5C-1	CH 15188	FILTER	ND*	ND*	ND*	ND*	ND*			
1C-1	CH 15189	FILTER	ND*	ND*	ND*	ND*	ND*			
2C-1	CH 15190	FILTER	ND*	ND*	ND*	ND*	ND*			
* Limit of Detection			1.	1.	1.	10	12.5			

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
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( ) Parameter between LOD and LOQ.

DataChem

ANALYTICAL REPORT

Date September 28, 1987
Agency Identification Number 87-2653
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 14, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 25, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Silver µg/filter	Aluminum µg/filter	Arsenic µg/filter	Boron µg/filter	Barium µg/filter	Beryllium µg/filter	Calcium µg/filter	Cadmium µg/filter
4C-2	CH 15633	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
5C-2	CH 15634	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
L1C-2	CH 15635	FILTER	ND*	10.	ND*	ND*	ND*	ND*	ND*	ND*
L2C-2	CH 15636	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
2C-2	CH 15637	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
1C-2	CH 15638	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			2.	10.	5.	10.	1.	1.	5.	1.

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

Analyst: Keith M. Holbrook

Reviewer: Henry F. Lin

Laboratory Supervisor: A. Brent Torgensen

UBTL

DataChem was formerly known as UBTL

DataChem

ANALYTICAL REPORT

Date September 28, 1987
Agency Identification Number 87-2653
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 14, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 25, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Cobalt µg/filter	Chromium µg/filter	Copper µg/filter	Iron µg/filter	Lanthanum µg/filter	Magnesium µg/filter	Manganese µg/filter	Molybdenum µg/filter	
4C-2	CH 15633	FILTER	ND*	ND*	ND*	1.	ND*	ND*	ND*	ND*	
5C-2	CH 15634	FILTER	ND*	ND*	ND*	1.	ND*	ND*	ND*	ND*	
L1C-2	CH 15635	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	
L2C-2	CH 15636	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	
2C-2	CH 15637	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	
1C-2	CH 15638	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	
* Limit of Detection			1.	1.	1.	1.	5.	1.	1.	1.	

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
** Parameter not analyzed(See comment on last page).
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DataChem

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Date September 28, 1987
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2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 14, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 25, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Nickel µg/filter	Lead µg/filter	Antimony µg/filter	Selenium µg/filter	Tin µg/filter	Tellurium µg/filter	Titanium µg/filter	Thallium µg/filter
4C-2	CH 15633	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
5C-2	CH 15634	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
L1C-2	CH 15635	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
L2C-2	CH 15636	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
2C-2	CH 15637	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
1C-2	CH 15638	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			1.	2.	10.	10.	10.	10.	10.	10.

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

DataChem

ANALYTICAL REPORT

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Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 14, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 25, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Vanadium µg/filter	Yttrium µg/filter	Zinc µg/filter	Zirconium µg/filter				
4C-2	CH 15633	FILTER	ND*	ND*	ND*	ND*				
5C-2	CH 15634	FILTER	ND*	ND*	ND*	ND*				
L1C-2	CH 15635	FILTER	ND*	ND*	ND*	ND*				
L2C-2	CH 15636	FILTER	ND*	ND*	ND*	ND*				
2C-2	CH 15637	FILTER	ND*	ND*	ND*	ND*				
1C-2	CH 15638	FILTER	ND*	ND*	ND*	ND*				
* Limit of Detection			1.	1.	1.	10.				

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

DataChem

ANALYTICAL REPORT

Date September 28, 1987
Agency Identification Number 87-2655
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 14, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 25, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Silver µg/filter	Aluminum µg/filter	Arsenic µg/filter	Boron µg/filter	Barium µg/filter	Beryllium µg/filter	Calcium µg/filter	Cadmium µg/filter
12C-1	CH 15645	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
11C-1	CH 15646	FILTER	ND*	11.	ND*	ND*	ND*	ND*	ND*	ND*
10C-1	CH 15647	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
9C-1	CH 15648	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
8C-1	CH 15649	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			2.	10.	5.	10.	1.	1.	5.	1.

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

Keith Holbrook
Analyst: Keith M. Holbrook

Henry F. Lin
Reviewer: Henry F. Lin

A. Brent Torgensen
Laboratory Supervisor: A. Brent Torgensen

UBTL

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ANALYTICAL REPORT

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2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 14, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 25, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Cobalt µg/filter	Chromium µg/filter	Copper µg/filter	Iron µg/filter	Lanthanum µg/filter	Magnesium µg/filter	Manganese µg/filter	Molybdenum µg/filter
12C-1	CH 15645	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
11C-1	CH 15646	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
10C-1	CH 15647	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
9C-1	CH 15648	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
8C-1	CH 15649	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			1.	1.	1.	1.	5.	1.	1.	1.

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

DataChem

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Agency Identification Number 87-2655
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 14, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 25, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Nickel µg/filter	Lead µg/filter	Antimony µg/filter	Selenium µg/filter	Tin µg/filter	Tellurium µg/filter	Titanium µg/filter	Thallium µg/filter
12C-1	CH 15645	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
11C-1	CH 15646	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
10C-1	CH 15647	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
9C-1	CH 15648	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
8C-1	CH 15649	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			1.	2.	10.	10.	10.	10.	10.	10.

† See comment on last page. ** Parameter not analyzed(See comment on last page).
ND Parameter not detected. ( ) Parameter between LOD and LOQ.
NR Parameter not requested.

APPENDIX C – DATA CHEM LABORATORIES AIR SAMPLE ANALYSIS

LABORATORY DATA: METALS
ANALYTICAL REPORT
AGENCY IDENTIFICATION NUMBER – 87-2655
PAGE 4 OF 4

RISK ASSESSMENT PROPOSED HOUSING
AREAS 1 AND 2, VOLUME II, APPENDICES

THE ABOVE IDENTIFIED PAGE IS NOT AVAILABLE.

EXTENSIVE RESEARCH WAS PERFORMED BY SOUTHWEST DIVISION TO LOCATE THIS PAGE. THIS PAGE HAS BEEN INSERTED AS A PLACEHOLDER AND WILL BE REPLACED SHOULD THE MISSING ITEM BE LOCATED.

QUESTIONS MAY BE DIRECTED TO:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676

DataChem

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 4
Part 1 of 4

RECEIVED OCT 0 1 1987

Date September 28, 1987
Agency Identification Number 87-2654
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 14, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 25, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Silver µg/filter	Aluminum µg/filter	Arsenic µg/filter	Boron µg/filter	Barium µg/filter	Beryllium µg/filter	Calcium µg/filter	Cadmium µg/filter
12C-2	CH 15639	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
11C-2	CH 15640	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
10C-2	CH 15641	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
9C-2	CH 15642	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
8C-2	CH 15643	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
CC-2	CH 15644	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			2.	10.	5.	10.	1.	1.	5.	1.

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

Analyst: Keith M. Holbrook

Reviewer: Henry F. Lin

Laboratory Supervisor: A. Brent Torgensen

UBTL

DataChem was formerly known as UBTL

DataChem

ANALYTICAL REPORT

Form ARF-AL
Page 2 of 4
Part 2 of 4

Date September 28, 1987
Agency Identification Number 87-2654
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 14, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 25, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Cobalt µg/filter	Chromium µg/filter	Copper µg/filter	Iron µg/filter	Lanthanum µg/filter	Magnesium µg/filter	Manganese µg/filter	Molybdenum µg/filter
12C-2	CH 15639	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
11C-2	CH 15640	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
10C-2	CH 15641	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
9C-2	CH 15642	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
8C-2	CH 15643	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
CC-2	CH 15644	FILTER	ND*	ND*	ND*	2.	ND*	ND*	ND*	ND*
* Limit of Detection			1.	1.	1.	1.	5.	1.	1.	1.

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

DataChem

ANALYTICAL REPORT

Date September 28, 1987
Agency Identification Number 87-2654
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 14, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 25, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Nickel µg/filter	Lead µg/filter	Antimony µg/filter	Selenium µg/filter	Tin µg/filter	Tellurium µg/filter	Titanium µg/filter	Thallium µg/filter
12C-2	CH 15639	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
11C-2	CH 15640	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
10C-2	CH 15641	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
9C-2	CH 15642	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
8C-2	CH 15643	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
CC-2	CH 15644	FILTER	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			1.	2.	10.	10.	10.	10.	10.	10.

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

DataChem

ANALYTICAL REPORT

Date September 28, 1987
Agency Identification Number 87-2654
Account No. 03019

Aqua Terra Technologies
2950 Buskik Avenue
Walnut Creek, CA 94596
Attention: Jan Halelevin

Telephone (415) 934-4884

Sampling Collection and Shipment

Sampling Site _____ Date of Collection _____

Date Samples Received at DataChem September 14, 1987

Analysis

Method of Analysis NIOSH 7300

Date(s) of Analysis September 25, 1987

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	Vanadium µg/filter	Yttrium µg/filter	Zinc µg/filter	Zirconium µg/filter				
12C-2	CH 15639	FILTER	ND*	ND*	ND*	ND*				
11C-2	CH 15640	FILTER	ND*	ND*	ND*	ND*				
10C-2	CH 15641	FILTER	ND*	ND*	ND*	ND*				
9C-2	CH 15642	FILTER	ND*	ND*	ND*	ND*				
8C-2	CH 15643	FILTER	ND*	ND*	ND*	ND*				
CC-2	CH 15644	FILTER	ND*	ND*	ND*	ND*				
* Limit of Detection			1.	1.	1.	10.				

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
** Parameter not analyzed(See comment on last page).
( ) Parameter between LOD and LOQ.

Laboratory Data:
Asbestos

TMA
Thermo Analytical Inc.

TMA/Norcal
1400 53rd Street
Suite 460
Emeryville, CA 94608-2946
(415) 652-2300

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ANALYSIS REPORT

Aqua Terra Technology
2950 Buskirk Avenue
Suite 120
Walnut Creek, CA 94596

Attention: Tom Mohr

September 18, 1987
Date Received: 9/3/87
TMA/Norcal #: 3320-79

Samples Identification		Chrysotile	Amphibole	Non-Asbestos Materials
TMA/Norcal	Customer	F/cc	F/cc	F/cc
3320-79-1	L1D-1	0.013	<0.006	0.012
3320-79-2	L2D-1	<0.006	<0.006	0.036
3320-79-3	4D-1	0.018	<0.006	0.006
3320-79-4	5D-1	<0.006	<0.006	<0.006
3320-79-5	1D-1	<0.006	<0.006	<0.006
3320-79-6	2D-1	<0.006	<0.006	0.069

Samples were analyzed by Transmission Electron Microscopy (TEM).

HYG:ltm

Harry Y. Gee
Harry Y. Gee
Program Manager

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
Richmond, CA 94804-0040
(415) 235-2633

Mailing Address
P.O. Box 4040
Richmond, CA 94804-0040

October 20, 1987

Aqua Terra Technology
2950 Buskirk Avenue
Walnut Creek, CA 94596

Attention: Jan Hale

Reference: TMA/Norcal Lab No. 3320-81; Aqua Terra Project 732.06

Dear Ms. Hale:

Enclosed are the results for 18 air-filter samples which you submitted on September 14, 1987 for evaluation of asbestos fibers by transmission electron microscope (TEM).

The mixed cellulose ester filters you submitted have diameters of 37 mm and effective collection areas of 8.6 cm^2. Ten grid-openings were scanned for each sample, using a magnification of 18000, such that the area scanned equals $6.4 \times 10^{-4} cm^2$.

The filters were all very clean and no asbestos fibers were observed. According to NIOSH Method 7402, the detection limit is a single confirmed asbestos fiber per filter. Since no asbestos fibers were observed on these filters, all the results have been reported as below the limit of detection.

When reporting the limit of detection in terms of fibers/cc, the volume of air sampled becomes a limiting variable. Assuming a clean sample with no fibers, a large volume of air would yield a lower limit of detection than a small volume of air (e.g. if vol = 3000L, LOD = $\simeq$ 0.002 f/cc, whereas if vol = 900L, LOD $\simeq$0.01 f/cc).

If you have any other questions about the analytical procedure or results, please call me.

Sincerely,

Rosemary Sliney

Rosemary Sliney
Supervisor, Microscopy Lab

RS/dss

Enclosure

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
Richmond, CA 94804-0040
(415) 235-2633

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REVISED ANALYSIS REPORT

AQUA TERRA TECHNOLOGY
2950 BUSKIRK AVENUE
SUITE 120
WALNUT CREEK, CA 94596
ATTN: TOM MOHR

DATE: 10-27-87
Samples Received: 9-3-87
TMA Lab No. 3320-79
Project No. 732.07

Analysis	Units	L1D-1 3320-79-1	L2D 1 3320-79-2
Asbestos Concen. By TEM	Fibers / cc	0.013	<0.0061
Magnification		16,500.	16,500.
Detection Limit	Fibers / cc	0.0063	0.0061
Grid Openings Scanned		20	20
Chrysotile Fibers		2	ND
Amphibole Fibers		ND	ND
Collection Volume	Liters	917.7	957.9

Analysis	Units	4D-1 3320-79-3	5D-1 3320-79-4
Asbestos Concen. By TEM	Fibers / cc	0.018	<0.0060
Magnification		16,500.	16,500.
Detection Limit	Fibers / cc	0.0060	0.0060
Grid Openings Scanned		20	20
Chrysotile Fibers		3	ND
Amphibole Fibers		ND	ND
Collection Volume	Liters	969.9	960.0

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
Richmond, CA 94804-0040
(415) 235-2633

Analysis	Units	1D-1 3320-79-5	2D-1 3320-79-6
Asbestos Concen. By TEM	Fibers / cc	<0.0060	<0.0063
Magnification		16,500.	16,500.
Detection Limit	Fibers / cc	0.0060	0.0063
Grid Openings Scanned		20	20
Chrysotile Fibers		ND	ND
Amphibole Fibers		ND	ND
Collection Volume	Liters	963.0	920.4

(ND=not detected)

Rosemary Sliney
for: Harry Gee
Program Manager

Analysis by Transmission Electron Microscopy

Revised analysis report prepared and reviewed by R. Sliney.

TMA Corporation laboratories are accredited by the American Industrial Hygiene Association; approved by the State of California for chemical, radiochemical, and hazardous waste testing.

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
Richmond, CA 94804-0040
(415) 235-2633

ANALYSIS REPORT

AQUA TERRA TECHNOLOGY
2950 BUSKIRK AVENUE
SUITE 120
WALNUT CREEK, CA 94596
ATTN: JAN HALE

DATE: 10-19-87
Samples Received: 9-14-87
TMA Lab No. 3320-81
Project No. 732.06
Survey No. 1

Analysis	Units	8D-1 3320-81-1	9D-1 3320-81-2
Collection Volume	Liters	960.000	956.000
Asbestos Concen. By TEM	Fibers / cc	<0.014	<0.014
Magnification		18000.	18000.
Detection Limit	Fibers / cc	0.014	0.014
Grid Openings Scanned		10	10
Chrysotile Fibers		ND	ND
Amphibole Fibers		ND	ND

Analysis	Units	10D-1 3320-81-3	11D-1 3320-81-4
Collection Volume	Liters	974.000	960.000
Asbestos Concen. By TEM	Fibers / cc	<0.014	<0.014
Magnification		18000.	18000.
Detection Limit	Fibers / cc	0.014	0.014
Grid Openings Scanned		10	10
Chrysotile Fibers		ND	ND
Amphibole Fibers		ND	ND

Analysis	Units	12D-1 3320-81-5	CD-1 3320-81-6
Collection Volume	Liters	968.000	942.000
Asbestos Concen. By TEM	Fibers / cc	<0.014	<0.014
Magnification		18000.	18000.
Detection Limit	Fibers / cc	0.014	0.014
Grid Openings Scanned		10	10
Chrysotile Fibers		ND	ND
Amphibole Fibers		ND	ND

(ND=none detected)

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
Richmond, CA 94804-0040
(415) 235-2633

Report to AQUA TERRA TECHNOLOGY 10/19/87

Analysis	Units	4D-2 3320-81-7	5D-2 3320-81-8
Collection Volume	Liters	970.000	966.000
Asbestos Concen. By TEM	Fibers / cc	<0.014	<0.014
Magnification		18000.	18000.
Detection Limit	Fibers / cc	0.014	0.014
Grid Openings Scanned		10	10
Chrysotile Fibers		ND	ND
Amphibole Fibers		ND	ND

Analysis	Units	L1D-2 3320-81-9	L2D-2 3320-81-10
Collection Volume	Liters	995.000	968.000
Asbestos Concen. By TEM	Fibers / cc	<0.014	<0.014
Magnification		18000.	18000.
Detection Limit	Fibers / cc	0.014	0.014
Grid Openings Scanned		10	10
Chrysotile Fibers		ND	ND
Amphibole Fibers		ND	ND

Analysis	Units	1D-2 3320-81-11	2D-2 3320-81-12
Collection Volume	Liters	966.000	984.000
Asbestos Concen. By TEM	Fibers / cc	<0.014	<0.014
Magnification		18000.	18000.
Detection Limit	Fibers / cc	0.014	0.014
Grid Openings Scanned		10	10
Chrysotile Fibers		ND	ND
Amphibole Fibers		ND	ND

(ND=none detected)

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
Richmond, CA 94804-0040
(415) 235-2633

Report to AQUA TERRA TECHNOLOGY 10/19/87

Analysis	Units	12D-2 3320-81-13	11D-2 3320-81-14
Collection Volume	Liters	980.000	988.000
Asbestos Concen. By TEM	Fibers / cc	<0.014	<0.014
Magnification		18000.	18000.
Detection Limit	Fibers / cc	<0.014	0.014
Grid Openings Scanned		10	10
Chrysotile Fibers		ND	ND
Amphibole Fibers		ND	ND

Analysis	Units	10D-2 3320-81-15	9D-2 3320-81-16
Collection Volume	Liters	974.000	992.000
Asbestos Concen. By TEM	Fibers / cc	<0.014	<0.014
Magnification		18000.	18000.
Detection Limit	Fibers / cc	0.014	0.014
Grid Openings Scanned		10	10
Chrysotile Fibers		ND	ND
Amphibole Fibers		ND	ND

(ND=none detected)

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
Richmond, CA 94804-0040
(415) 235-2633

Report to AQUA TERRA TECHNOLOGY 10/19/87

Analysis	Units	8D-2 3320-81-17	CD-2 3320-81-18
Collection Volume	Liters	966.000	1000.
Asbestos Concen. By TEM	Fibers / cc	<0.014	<0.013
Magnification		18000.	18000.
Detection Limit	Fibers / cc	0.014	0.013
Grid Openings Scanned		10	10
Chrysotile Fibers		ND	ND
Amphibole Fibers		ND	ND

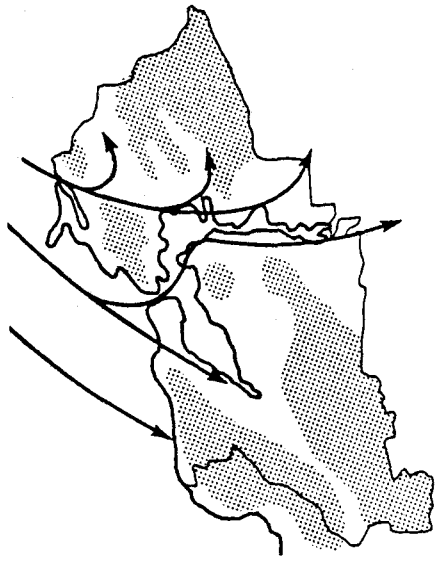
(ND=none detected)

Larry E. Penfold
Operations Manager

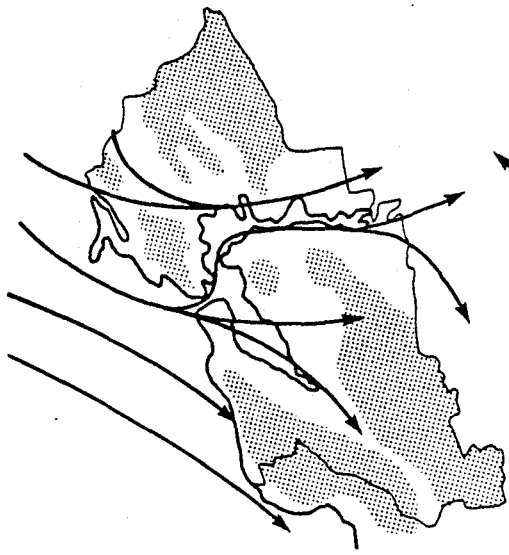
APPENDIX D

Wind Data

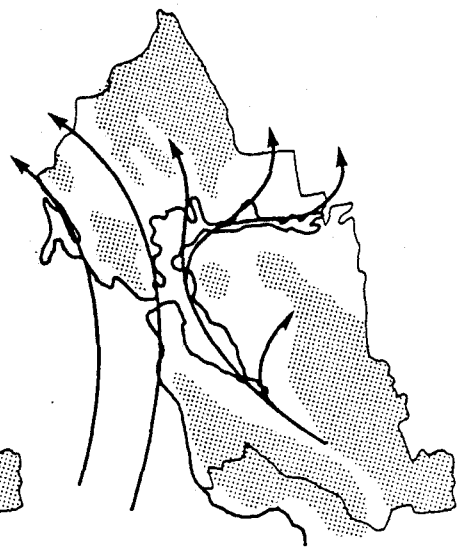
Figure 2b - BAY AREA AIR FLOW PATTERN TYPES



Ia Northwesterly
(weak)

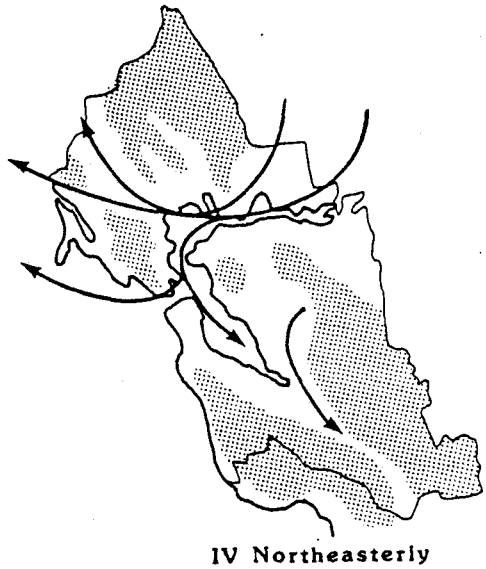


Ib Northwesterly
(moderate to strong)

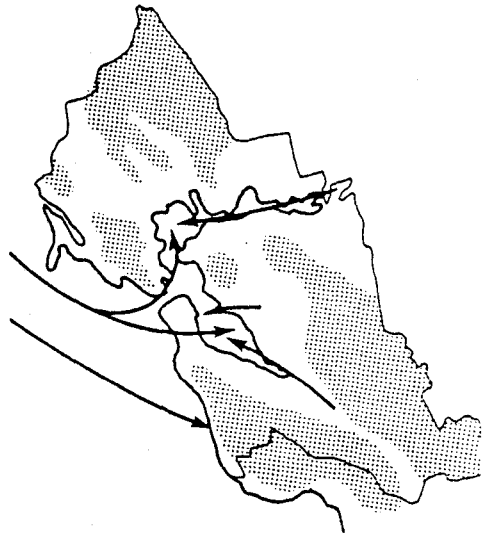


II Southerly

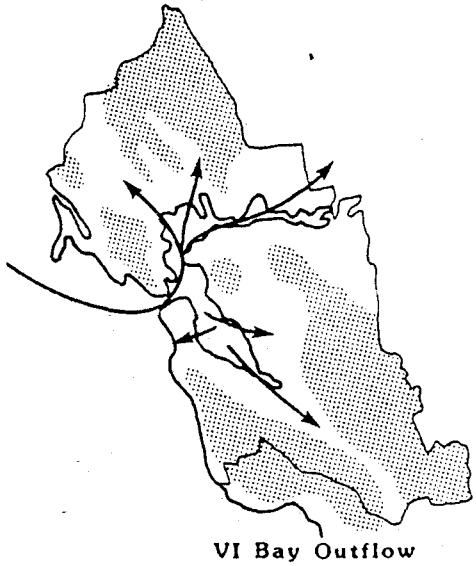
III Southeasterly



IV Northeasterly



V Bay Inflow



VI Bay Outflow

Table 2b

SAN FRANCISCO BAY AREA AIR BASIN SURFACE AIRFLOW TYPES
SEASONAL AND DIURNAL PERCENTAGE OF OCCURRENCE
(1977-1981 Data)

Types / Time - PST	Ib Northwesterly (Weak)	Ia Northwesterly (Moderate to Strong)	II Southerly	III Southeasterly	IV Northeasterly	V Bay Inflow	VI Bay Outflow	VII Calm
Winter								
4 a.m.	3	4	19	14	8	21	5	24
10 a.m.	4	5	19	20	10	11	19	9
4 p.m.	16	16	16	12	13	3	22	1
10 p.m.	6	9	14	14	10	20	3	21
All Times	7	9	17	15	10	14	12	14
Spring								
4 a.m.	27	25	11	2	4	15	5	12
10 a.m.	29	25	14	6	5	3	17	1
4 p.m.	22	60	7	4	4	2	2	*
10 p.m.	40	34	8	2	4	5	3	5
All Times	29	36	10	3	4	6	7	5
Summer								
4 a.m.	40	37	4	*	0	6	2	10
10 a.m.	37	44	4	*	1	1	13	0
4 p.m.	20	77	2	0	1	0	*	0
10 p.m.	39	55	2	0	*	1	1	1
All Times	34	53	3	0	1	2	4	3
Fall								
4 a.m.	25	13	7	6	3	22	3	19
10 a.m.	28	15	6	11	6	7	23	4
4 p.m.	31	46	5	2	6	2	7	*
10 p.m.	37	24	6	4	3	13	1	12
All Times	30	24	6	6	4	11	9	9
Yearly								
4 a.m.	24	20	10	6	4	16	4	16
10 a.m.	25	22	11	9	6	6	18	4
4 p.m.	22	50	8	5	6	2	7	*
10 p.m.	31	30	8	5	4	10	2	10
All Times	26	30	9	6	5	8	8	8

* < 0.5 percent

APPENDIX E

Summary of Toxicological Data and References

APPENDIX E

TOXICOLOGY OF INDICATOR CONTAMINANTS

2-BUTANONE (METHYL ETHYL KETONE)

The chemical 2-butanone is a common solvent and is also a byproduct of gasoline combustion.

Quantitative data on the pulmonary absorption of 2-butanone are not available, but absorption from the lungs can be inferred from the toxic effects observed after acute and subchronic inhalation exposures (Lande et al. 1971).

The subchronic inhalation studies on 2-butanone were summarized by the EPA (EPA 1984a). Cavender et al. (1983) exposed both sexes of rats to 2-butanone at concentrations of 0, 1,250, 2,500 or 5,000 ppm, (0, 3,675, 7,350, 14,700 mg/m^3) 6 hours/day, 5 days/week, for 90 days. There were no treatment-related effects at the 1,250 ppm level; SGPT activity in female rats was elevated at the 2,500 ppm level. At the 5,000 ppm level, effects were more severe and included depressed mean body weight; slight but significant increases in liver weight, liver-to-body weight ratio, and liver-to-brain weight ratio; significantly decreased SGPT activity; and increased alkaline phosphatase, potassium and glucose values in treated females. A no observed adverse effect level (NOAEL) for increased SGPT activity of 2,500 ppm of 2-butanone can be suggested for rats from this study.

Exposure of rats to 2-butanone at a level of 200 ppm, (588 mg/m^3) 12 hours/day, 7 days/week for 24 weeks

resulted in slight neurological effects visible only at 4 months of treatment (Takeuchi et al., 1983), but exposure of rats to 1,125 ppm (3,307 mg/m^3) continuously for 5 months did not result in neuropathy, defined in terms of paralysis (Saida et al., 1976). In both studies only a single toxicological endpoint, either motor nerve conduction velocity, mixed nerve conduction velocities, or distal motor latency (Takeuchi et al., 1983) or paralysis (Saida et al., 1976) was examined.

Schwetz et al. (1974) exposed pregnant Sprague-Dawley rats to 2-butanone by inhalation at levels of 1,000 (2,940 mg/m^3) or 3,000 (8,820 mg/m^3) ppm for 7 hours/day on days 6-15 of gestation. There was no maternal toxicity at either exposure level. Somewhat decreased fetal body measurements (body weight and crown-to-rump length) were seen at the lower but not at the higher exposure level. At the 1000 ppm level, a significant increase in litters having fetuses with skeletal abnormalities was seen; however, there was no significant increase in specific gross, soft-tissue or skeletal anomalies. At the 3000 ppm level, a significant increase in litters having fetuses with gross external anomalies or internal soft-tissue anomalies was seen.

Schwetz et al. (1974) concluded that in rats 2-butanone is embryotoxic, fetotoxic and potentially teratogenic at exposure levels of 1000 or 3000 ppm by inhalation for 7 hours/day on days 6-15 of gestation. There were no apparent effects on dams at either exposure level.

2-butanone has not been tested for carcinogenicity by the oral or inhalation routes. No tumors were observed during pathological examinations in subchronic toxicity

tests discussed earlier. IARC has not evaluated the risk to humans associated with oral or inhalation exposure to 2-butanone. Applying the EPA criteria, no data are available regarding the carcinogenicity of 2-butanone in humans or animals, and the chemical is most appropriately designated a Group D - Not Classified chemical.

The acceptable intake subchronic (AIS) for inhalation of 2-butanone has been calculated to be 2.19 mg/Kg/day or 153.4 mg/day for a 70 Kg human (EPA 1984a). The acceptable intake chronic (AIC) for inhalation of 2-butanone has been calculated to be 0.219 mg/Kg/day or 15.3 mg/day for a 70 Kg human (EPA, 1984a).

DICHLOROMETHANE (METHYLENE CHLORIDE)

Dichloromethane is a halogenated aliphatic hydrocarbon. It is a common solvent used in paint stripping and degreasing, and is also used as a refrigerant and in plastics processing. Its half-life in air is 53 to 127 days (Singh, et al., 1981; Makide and Rowland, 1981).

The theoretical absorption of inhaled dichloromethane during short exposures should be related directly to the concentration in inhaled air (Lehmann and Schmidt-Kehl, 1936). The absorption rate is rapid at first, but then levels off (DiVincenzo and Kaplan, 1981). The rate is also dependent on the duration of exposure and physical activity during exposure (Astrand et al., 1975). Obesity of the individual also enhances dichloromethane uptake (Engstrom and Bjurstrom, 1977).

In humans, mild intoxication by dichloromethane results in somnolence, lassitude, anorexia, and mild

lightheadedness, followed by greater degrees of disturbed central nervous system function and depression. Permanent disability has not been reported (NAS, 1978).

Recent epidemiological studies have not revealed adverse effects in humans occupationally-exposed to dichloromethane. Friedlander et al. (1978) reported an epidemiological study of male workers at Eastman Kodak exposed primarily to dichloromethane. The workers had been exposed to time-weighted average (TWA) concentrations of 30 to 125 ppm (106 to 440 mg/m^3) dichloromethane (estimated both from air monitoring and blood carboxyhemoglobin levels) for up to 30 years. A proportionate mortality study using death certificates from 334 exposed workers who died from 1956-1976 was performed. A cohort mortality study involving all 751 workers employed in the exposure area in 1964 and a separate analysis of a subgroup of 252 of these workers exposed for a minimum of 20 years by 1964 were also performed. Data from this subgroup were analyzed separately to discuss effects requiring long latency periods. The follow-up period in the cohort mortality study was 13 years. Control groups consisted of other Eastman Kodak male employees working in production but not exposed to dichloromethane, New York State male cause-and age-specific mortality rates and United States male age-specific mortality rates. Follow-up of workers aged greater than or equal to 25 years was greater than 97 percent as of 1964. None of these studies revealed any indication of increased risk of death from circulatory disease including ischemic heart disease, cancer, or other causes.

More recently, Ott et al. (1983) investigated mortality and current cardiac health in workers from a fiber production plant in which dichloromethane was used as a solvent. Reasoning that metabolism of dichloromethane to carbon monoxide results in an increase in percentage of carboxyhemoglobin with a commensurate decrease in the oxygen-carrying capacity of the blood, these authors (Ott et al., 1983) suggested that exposure to dichloromethane may lead to an increase in the incidence of ischemic cardiac disease. Data on mortality were obtained from a group of workers in a fiber manufacturing plant exposed for at least three months between January 1, 1954 and January 1, 1977 to a TWA of 141.5 ppm (495 mg/m^3) dichloromethane. A control group was composed of workers in another part of the plant not exposed to dichloromethane. Mortality data indicated no increase in deaths in either men or women from circulatory system diseases, ischemic heart disease as a separate category, or malignant neoplasms associated with exposure to dichloromethane.

The effects of long-term dichloromethane exposure have been studied in Sprague-Drawley rats and Golden Syrian hamsters. These organisms were exposed to 0, 500, 1,500, or 3,500 ppm 0, 1,740, 5,220, or 12,180 mg/m^3) dichloromethane for six hours/day, five days/week for up to two years (Burek et al., 1980, 1984, and Dow Chemical, 1980). Mortality was unaffected by treatment except that high-dose females had a significantly elevated mortality rate starting at the 13th month of exposure. Mean liver weights were increased in rats in the high dose group. An increased incidence of liver cell vacuolization was noted in all exposed groups of rats. In this study a lowest observed adverse effect

level (LOAEL) based on liver cell damage was defined as 500 ppm (1,740 mg/m^3).

No teratogenicity was found in inhalation studies of dichloromethane. However, though no abnormalities were noted, a significant slight decrease in fetal body weight was recorded for rats exposed during gestation (EPA, 1984b).

Carcinogenicity has not been associated with human exposures to dichloromethane, but several studies with rodents have shown that oral dichloromethane intake causes increased incidences of combined neoplastic nodules and liver cell carcinomas (EPA, 1984b). These results suggested dichloromethane to be classified as a "borderline" animal carcinogen when given orally.

Burek et al. (1980, 1984) and Dow Chemical Co. (1980) studied the carcinogenicity of dichloromethane from chronic (two-year) inhalation exposure. Sprague-Dawley rats and Golden Syrian hamsters were exposed to dichloromethane at 0, 500, 1,500, or 3,500 ppm for six hours/day, five days/week for up to two years. No exposure-related differences in the incidences of benign or malignant tumors were observed in male hamsters. There was a statistically significant increase in the incidence of benign tumors in female hamsters exposed to 3,500 ppm dichloromethane, but this increase was attributed to increased longevity enjoyed by that group as a result of delayed diseases of aging.

In female rats, an increase in the number of benign mammary tumors per tumor-bearing rat (but not in the number of tumor-bearing rats) was observed at all dose levels. An increase in the number of benign mammary

tumors in tumor-bearing rats was also noted in males in the high-dose group. More importantly, a dose-related increase in sarcomas involving the salivary gland became statistically significant at the high-dose exposure level in male rats. These tumors appeared to arise from mesenchymal rather than epithelial tissue. Interpretation of these findings is difficult, according to the investigators (Burek et al., 1984). Studies of chronic dichloromethane exposure at high levels in a wide variety of laboratory species have established the liver as the primary target organ. The present indication of an apparent relationship between dichloromethane and the salivary gland was unusual and appeared to be inconsistent with previously reported data. Early in the course of treatment, these rats had apparently contracted a viral disease, sialodacryoadenitis, in the salivary glands. It was suggested that the combination of the virus with dichloromethane may have increased the incidence of salivary gland neoplasia. The fact that these sarcomas appeared to arise from mesenchymal tissue rather than from epithelial (glandular) tissue added to the confusion. The authors (Burek et al., 1984) expected primary salivary gland neoplasms to arise from epithelial cells.

According to EPA criteria, dichloromethane is classified as a Group B - Probable Human Carcinogen. A combination of male rat carcinogenic potency and female rat was used to estimate a human potency value (q*). Potency for oral exposure to dichloromethane is estimated to be 1.23×10^{-2} (mg/Kg/day). A carcinogenic potency value for dichloromethane inhalation is estimated to be 2.86×10^{-4} $(mg/Kg/day)^{-1}$ (EPA, 1985a). A unit risk value for

exposure to 1 ug/m^3 dichloromethane for a lifetime is calculated to be 1.7 x 10^{-7} $(ug/m^3)^{-1}$ (EPA, 1987).

ETHYLBENZENE

Ethylbenzene is a monocyclic aromatic hydrocarbon which exhibits a half-life in air of 35 hours. It is a common product of petroleum refining. Few studies have been done to determine absorption factors of ethylbenzene, and the results have been inconclusive. Bardoaej and Bardodejova (1970) were able to determine that human volunteers absorbed 64 percent of the total ethylbenzene to which they were exposed through inhalation at dose levels ranging from 100 to 300 mg/m^3.

The target organs of acute ethylbenzene exposure are the lungs and central nervous system (Smyth et al., 1962 and Faustov, 1958, 1960). The main effects of subchronic and chronic inhalation exposures of ethylbenzene to animals appeared in the liver and kidneys (Wolf et al., 1956) and included increase in hepatic and renal weight accompanied by cloudy swellings of hepatocytes and renal tubular epithelial cells. Slight testicular degeneration was also noted in rabbits and monkeys (Wolf et al., 1956).

Several animal studies have suggested that ethylbenzene has some teratogenic effects. Pregnant New Zealand rabbits were exposed to ethylbenzene vapor at a dose level of 435 ppm (4,348 mg/m^3) for six to seven hours/day on days one to 24 of gestation (Hardin et al., 1981). On day 30 the rabbits were killed; maternal organs were weighed and examined grossly and microscopically. Fetuses were weighed, sexed, measured for crown-rump length and examined for external,

internal, and skeletal abnormalities. There was a statistically significant reduction in the number of live kits/litter ($p<0.05$) at both exposure levels, although the number of dead and resorbed fetuses was not increased above matched controls. Neither maternal toxicity nor fetal malformations were evident.

In a second study, pregnant rats were exposed to ethylbenzene vapor at a dose level of 435 ppm (4,348 mg/m^3) for six to seven hours/day on days one to 19 of gestation (Hardin et al., 1981). On day 21 the rats were killed. At the higher dose level, maternal toxicity was indicated by increased liver, kidney, and spleen weights. A statistically significant increase in extra ribs ($p<0.05$) occurred in the offspring of mothers exposed to both dose levels. The authors concluded that the results of their experiment in rats suggested (rather than indicated) a teratogenic potential for ethylbenzene.

No data exists on the carcinogenic effects of ethylbenzene on humans. It is classified as a Group D - Not Classified Compound (EPA, 1984c).

The maximum dose of ethylbenzene tolerable for subchronic and chronic exposures to humans has not been derived by the EPA (EPA, 1984c). Harris (1983) estimated a minimum effective dose (MED) of 724 mg/day based on an effect of increased liver and kidney weight in exposed rats.

TETRACHLOROETHENE

Tetrachloroethene is a halogenated aliphatic hydrocarbon which is commonly used as a solvent. It has a half-life

in air of 47 days. The principal route of tetrachloroethene uptake is pulmonary absorption of alveolar air (EPA, 1979). Tetrachloroethene absorption via the lungs is rapid, and the amount of tetrachloroethene absorbed at a given vapor concentration (for exposure of greater than eight hours) is directly related to the respiratory volume at air inhaled (Hake and Stewart, 1977).

Human health effects as a result of chronic inhalation exposure to various concentrations of tetrachloroethene include respiratory tract irritation, nausea, headache, sleeplessness, abdominal pains, and constipation (Chmielewski et al., 1976; Coler and Rossmiller, 1953; Stewart et al., 1970; von Oettingen, 1964). Liver cirrhosis, hepatitis, and nephritis have also been reported (Stewart, 1969). Lack of dose quantification and a dose-response relationship precludes the use of these data for quantitative risk assessment for inhalation exposure to tetrachloroethene.

The effects of subchronic inhalation exposure to tetrachloroethene have been examined in rats, mice, rabbits, guinea pigs, and monkeys. Carpenter (1937) exposed three groups of albino rats to tetrachloroethene vapors at average concentration levels of 70, 230, or 470 ppm (equivalent to 475, 1,560, or 3,188 mg/m^3) for eight hours/day, five days/week for seven months. The control group consisted of 18 unexposed rats. After exposure and a 46-day rest period, rats exposed to 470 ppm tetrachloroethene had cloudy and congested livers with swelling but no evidence of fatty degeneration or necrosis. Following exposure to 230 ppm tetrachloroethene and a 20-day rest period, treated rats at this level had similar but less severe pathologic

changes as the highest exposure group. These changes included renal and splenic congestion and reduced hepatic glycogen storage. There was no evidence of pathologic changes in the liver, kidneys, or spleen of animals exposed to 70 ppm tetrachloroethene for seven months. A no observed effect level (NOEL) of 70 ppm (482 mg/m^3) tetrachloroethene for hepatic, renal, and splenic pathologic changes in rats can be derived from this study.

Rowe et al. (1952) exposed rats, rabbits, guinea pigs, and monkeys to tetrachloroethene vapors at levels of 100 to 400 ppm (689 to 2,756 mg/m^3) for seven hours/day, five days/week for approximately six months. No abnormal growth, organ function, or histopathologic findings were seen at any exposure level among treated rats, rabbits, or monkeys. Guinea pigs, however, were more susceptible to tetrachloroethene, with adverse effects occurring at all exposure levels. Guinea pigs exposed to tetrachloroethene vapors at a level of 100 ppm had increased liver weights, while both sexes of guinea pigs exposed to 200 ppm had increased liver weights with some fatty degeneration, a slight increase in hepatic lipid content, and the presence of several small hepatic fat vacuoles. A LOAEL of 100 ppm (689 mg/m^3) tetrachloroethene for hepatic effects in guinea pigs can be derived from this study.

The teratogenicity of tetrachloroethene was shown in a study by Schwetz et al. (1975), where pregnant Sprague-Dawley rats and Swiss-Webster mice were exposed to tetrachlorethene by inhalation at a level of 300 ppm (2,035 mg/m^3) for seven hours/day on days six to 15 of gestation. Maternal rats had a statistically significant reduction in mean body weight while maternal

mice had increased mean relative liver weight. The fetal body weight of mice was significantly depressed. A significantly increased number of rat fetuses were resorbed. For mice, the incidences of subcutaneous edema, delayed ossification of skull bones, and split sternebrae were significantly increased compared with the incidence of the effects in control mice.
In a study of 330 deceased laundry and dry-cleaning workers with a history of exposure to tetrachloroethene, carbon tetrachloride, and trichloroethylene, Blair et al., (1979) observed an excess of lung, cervical, and skin cancer and a slight excess of leukemia and liver cancers.

In 1985, the EPA classified tetraachloroethene as a Group C - Possible Human Carcinogen, based on the limited evidence of carcinogenicity in animals and inconclusive evidence of human carcinogenicity from epidemiologic studies (EPA, 1985b). In 1986 EPA proposed an upgrade in the classification of tetrachloroethene to a Group B2- Probable Human Carcinogen based on their assessment of sufficient evidence of carcinogenicity in animals and inadequate evidence of carcinogenicity in humans (EPA, 1986). The EPA's Science Advisory Board on reviewing the 1986 Addendum to the Health Assessment Document for tetrachloroethylene recommend that the compound remain classified as Group C- Possible Human Carcinogen. CAC currently supports the Group B2 classification and this matter is currently under review.

The carcinogenic potency (q_1^*) has been calculated for oral tetrachloroethene exposure by the EPA. Tetrachloroethene carcinogenic potency is estimated to be 3.9776×10^{-2} $(mg/Kg/day)^{-1}$. A q_1^* value for

inhalation exposures could not be derived due to lack of a controlled study where an increase in tumor incidence was demonstrated following inhalation exposure to tetrachloroethene (EPA, 1984d). A range of unit risk values have been estimated for life-time inhalation exposures to one ug/m^3 tetrachloroethene (2.9 - 7.5 x 10^{-7} ug/m^3)$^{-1}$ (EPA, 1986).

TOLUENE

Toluene is a purgeable monocyclic aromatic hydrocarbon. It is a major component of gasoline and is also used as a solvent. Toluene has a half-life in air of 1.3 days (Singh et al., 1981). This half-life is based on the reaction toluene has with hydroxyl radicals. It can also react with nitrous oxide in the presence of smog and display a shorter half-life (Van Aalst et al., 1980).

In humans, the arterial concentration of toluene was increased quickly as compared with both the concentration of toluene in the alveolar air and its concentration in the inspired air (Astrand et al., 1972; Astrand, 1975). Studies have shown that the proportion of toluene absorption during the first hour of exposure was 57 percent. The percentage of toluene absorbed two to four hours after the start of exposure was 37 percent of the inspired dose (Nomiyama and Nomiyama, 1974).

The effects of chronic toluene exposures to humans have been widely studied due to toluene's widespread use in the workplace. For mean exposure levels greater than 200 ppm, all of the available studies except that of Suhr (1975) report some evidence of neurologic effects. Reports of headache, nausea, and concentration related

impairment of coordination (Wilson, 1943) are consistent with the relatively well-documented central nervous system effects of single exposures to toluene. Toluene abuse, in several cases for as long as 10-14 years, caused severe effects including ataxia, tremors, incoordination, emotional instability, hystagmus, a positive Babinski response, psychoses, and decreased cerebellar functioning (reviewed in EPA, 1984e). Subchronic inhalation studies of toluene in animals indicate that female rats are more sensitive to toluene than male rats (Ungvary et al., 1980). At toluene exposures of 1,000 mg/m^3 female rats showed changes in liver weight and body weight as well as an increase in cytachrome P-450 level. Pregnant ICR mice were exposed to toluene vapor at a level of 100 ppm (377 mg/m^3) and 1,000 ppm (3,770 mg/m^3) for six hours/day on days one to 17 of gestation (Shigeta et al., 1982). There were 18 mice exposed to the low dose, 14 mice exposed to the high dose, and 15 controls. Approximately two thirds of each group of animals were sacrificed on day 18 of gestation. The fetuses were examined for extra ribs, fused ribs, cleft vertebrae, cleft sternum, cranioschisis and polydactyly. In the absence of observed effects, the authors concluded that toluene was not fetotoxic or teratogenic.

The offspring of Charles River rats exposed to toluene vapor at concentrations of 100 and 400 ppm (377 and 1,500 mg/m^3), respectively, for six hours/day on days six to 15 of gestation (Litton Bionetics, Inc., 1978) did not have an increased incidence of visceral or skeletal abnormalities, compared with a control group. No maternal or fetal toxicity was reported (Litton Bionetics, Inc., 1978). A group of 20 CFY pregnant rats was exposed to toluene vapor at a concentration of 1,000

mg/m^3 (ppm) for two hours/day on days seven to 14 of gestation (Tatrai et al., 1980). A group of 22 pregnant CFY rats constituted the control group. Although toluene exposure at this level did not significantly alter maternal or fetal mortality or body weights, retarded skeletal growth as judged by inspection of Alizarine stained fetuses occurred at a statistically significant level in the toluene exposure group. In another experiment, one group of 10 CFY rats was exposed to toluene vapors at a concentration of 1,000 mg/m^3 for eight hours/day on days one to 21 of gestation; another group of nine rats was exposed to 1,500 mg/m^3 continuously on days one to eight of gestation; and a third group of 26 rats was exposed to 1,500 mg/m^3 continuously on days nine to 14 of gestation. Although there were no visceral or external malformations because of toluene exposure at the levels tested, retarded skeletal development (poorly ossified sternebrae, split vertebral centra and shortened free ribs) or skeletal anomalies (extra ribs and fused sternebrae) occurred at all three levels tested (Hudak and Ungvary, 1978).

There is no pertinent data regarding the carcinogenicity of toluene to humans following inhalation exposures. A chronic bioassay of toluene in Fisher 344 rats of both sexes showed no carcinogenic effects (CIIT, 1980). Toluene is classified as a Group D - Not Classified chemical according to EPA criteria (EPA, 1984e).

The AIS for toluene exposure through oral uptake is 30 mg/day and through inhalation is 104 mg/day for a 70 Kg human. The AIC for oral toluene uptake is 20.0 mg/day and the AIC toluene inhalation is 41 mg/day for a 70 Kg man (EPA, 1984e).

XYLENE

Xylene is a monocyclic aromatic hydrocarbon and is a common constituent of gasoline. It can exist in three isomeric forms with commercial xylene being a mixture of the three. The half life of xylene in air ranges from eight to 15 hours depending on the form.

Studies evaluating the inhalation absorption rate in humans exposed to doses ranging from 100 - 1,300 mg/m^3 indicated that approximately 60 percent of the xylene present in inspired air, regardless of the isomer or isomer mixture used, is absorbed (Astrand et al., 1978; Riihimaki et al., 1979a).

In male rats exposed to high xylene dose (3,500 mg/m^3), an increase in erythrocyte and monocyte counts was noted (Carpenter et al., 1975). These effects disappeared after the seventh week of testing. A decrease in brain superoxidase dismatase was noted in another study of rats exposed to 1,300 mg/m^3 xylene. Rats also recovered from this effect (Savolainen et al., 1979).
Chronic xylene inhalation by rats led to an increase in food uptake without subsequent gain in body weight (Tatrai et al., 1981). Hepatomegaly and altered enzyme patterns were also found in exposed rats. Cytochrome P-450, NADPH-cytochrome c reductase, aniline hydroxylase and animopryin-n-demethylase activity were increased, while bromosulfophthalein retention time in the liver decreased. Ultrastructurally, the centrilobular hepatocytes of xylene-treated rats had moderate smooth endoplasmic reticulum proliferation, an increased number of peroxisomes and autophagous bodies, glycogen depletion and some damaged mitochrondria.

Teratogenic effects were noted at high dose levels of xylene inhalation. Continuous exposure through inhalation of 26 pregnant rats to a 1,000 mg/m^3 xylene - ethylbenzene mixture in a ratio of 4 to 1 on days nine to 14 of gestation resulted in increased incidence of fused sternebrae and extra ribs and of retarded skeletal development of offspring. At even higher dosages maternal food consumption and weight decreased while resorptions of fetuses increased (Hudak and Ungvary, 1978).

There is no human epidemiological data or animal bioassay data to indicate that xylene is a carcinogen. Xylene is classified in Group D - Not Classified Chemical according to EPA criteria (EPA, 1984f).

The AIS of xylene for oral exposure was calculated to be 7.0 mg/day for a 70 Kg human. AIS xylene via inhalation exposure was calculated to be 325.0 mg/day for a 70 Kg human. The AIC for chronic oral inhalation exposure was calculated to be 0.7 mg/day and 82.33 mg/day, respectively (EPA, 1984f).